DEVELOPMENT OF A TEXTILES PRETEST FOR COLLEGE STUDENTS

by

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INTRODUCTION

Textiles is only one of the many fields in which an individual in today's modern world needs to possess an increasing knowledge for effective living. Because of the growing tempo of American life, today's consumers expect variety, durability, comfort, and ease of care in personal clothing and home furnishings. Advances in man-made fibers, in finishes applied to the natural fibers, in weaves, and in designs call for an increase in consumer awareness of textiles. Stout (25) pointed out these facts by saying:

> How can the consumer judge whether or not she is getting the properties she desires in a fabric, item of apparel, or furnishing? Experience is not an infallible guide in this day of many fibers, mixtures, blends, and special finishes, but it often helps . . . The consumer who has thought through her needs, what sort of fabrics or items will best serve these needs in relation to the care she wishes to give, and what she can afford to spend initially and in upkeep, and who has used the available information to help her arrive at a decision in making her choices among the various things offered on the market, has infinitely better chances of succeeding in buying wisely and satisfactorily than any amount of 'lucky' haphazard buying can possibly give.

An increase in textile knowledge is necessary so that a wise selection may be made from among the many items available.

This study was concerned with developing a pretest to measure the extent of the knowledge of textiles possessed by college students before formal instruction in a college textiles course. It was also the purpose of this study to analyze the data obtained from administering the pretest so as to aid textile instructors in planning a beginning textiles course, and to make recommendations for future use of the test.

The growing availability of textile information for consumers was one factor on which this study was based. The Textile Fiber Products Identification Act and other textile legislation provide that textile information

be included with certain consumer articles. Other sources of consumer information include excellent advertising media through newspapers, magazines, radio, and television.

The lack of previous studies in the area also prompted the pursuit of this research. In a review of literature this author was unable to find any previous research dealing specifically with textile pretesting. Pretesting studies have been done in other areas of home economics and primarily involved laboratory classes such as clothing construction. Spafford indicated that the true values of pretesting have not been realized, particularly in home economics, by saying "pretesting has been a much neglected aspect of evaluation" (23). Therefore, a need for this type of study was evident.

In addition, it was felt that a study such as this would prove helpful to the instructors of the beginning textiles course at Kansas State University in planning instruction by providing information of the variation in students' knowledge of textiles. The pretest would assist in establishing a basis for students' learning. An analysis of the strengths, weaknesses, and misconceptions expressed by students would reveal particular areas of textile information which need emphasis in the course. The pretest developed and the information provided by this study would not be limited in their usefulness to this institution, but also would be of value to textile instructors in other colleges and universities.

It is assumed that the students' backgrounds vary widely, as well as their knowledge of textiles. Variation in the students' background may occur in the size of their home community and high school, in their parents' occupations and educational levels, or in the amount of high school clothing classes and 4-H clothing projects completed. An analysis of the relationships

which may exist between certain socio-economic factors and the amount of textile knowledge possessed by a student would be valuable to instructors since such relationships could be considered when planning the course. The same information might also be useful to high school clothing teachers and 4-H leaders in determining whether their selected emphasis on textiles had been effective.

Therefore, the specific objectives of the study were:

(1) To develop a pretest which would measure the knowledge of textiles possessed by college students prior to a beginning textiles course.

(2) To administer the pretest and present data which would indicate that college students vary in their knowledge of textiles prior to a beginning textiles course.

(3) To analyze the data obtained from the pretest, by areas of textile knowledge, for strengths, weaknesses, and misconceptions in textile information.

(4) To determine if selected factors of socio-economic background have an effect on the knowledge of textiles possessed by college students.

REVIEW OF LITERATURE

Educational Measurement

Education, as defined by Furst (7) is the process of changing the behavior patterns of human beings. Education may occur in almost any situation; however, formal education in America has been assigned to the school classroom. Education involves curriculum development and instruction. Evaluation is also an integral aspect of education. Arny (2) stated that evaluation must be an inherent part of any effective educational program,

including home economics.

Evaluation was designated by Tyler in Chapter 2, "The Functions of Measurement in Improving Instruction," edited by Lindquist (16), as a process of appraisal which involved the identification and formulation of the major objectives of a curriculum as defined in terms of pupil behavior, and the construction of practical, valid, and reliable instruments of measurement for observing pupil behavior. Army (2) agreed by saying evaluation had a broader meaning than measurement since evaluation implied that the measurement had been interpreted in light of certain values.

Measurement, therefore, refers to obtaining quantitative evidence which furnishes a basis for evaluation. Tests are most frequently used to provide the quantitative evidence needed.

Five general functions of measurement instruments in education have been summarized by Cook in Chapter 1, "The Functions of Measurement in the Facilitation of Learning," edited by Lindquist (16):

(1) The facilitation of learning;

(2) The improvement of instruction;

(3) Counseling and guidance;

(4) Educational placement; and

(5) Overall educational planning.

The first function of measurement instruments is the facilitation of learning. Tests may motivate learning by stimulating discussion or by clarifying goals. Students are able to see the progress which they have made when tests are given to measure learning. Tests are often a part of the basis for assigning marks and, when correctly and effectively used in this manner, may also motivate learning.

The improvement of instruction, another function of instruments of measurement, is achieved when tests help to discover exactly where the student is having learning difficulties. The initial status of the student may also be determined by pretests to give a basis for instruction. Tests may provide a diagnosis of the strengths and weaknesses of the student, as well as any misconceptions which he might have. This was pointed out by Remmers and Gage (20):

> Evaluations can guide teaching when they furnish diagnoses of specific strengths and weaknesses in the pupil's achievement or capacities. The teacher may then seek either to eliminate the weaknesses by using special teaching methods and emphases, or to circumvent them by directing learning toward areas where the pupil's efforts will be more fruitful. The causes of weakness...may be due to a lack of the presupposed background material. Diagnostic testing may thus reveal the precise sources of a pupil's short-comings and guide the teacher to the optimum way of overcoming them.

Counseling and guiding the students are also a valuable function of measurement instruments. The optimum vocational, educational, and social adjustments may be achieved by a student when tests are effectively used by a student counseling service.

Another function is the educational placement of entering and transferring students in appropriate courses. Such placement is often expedited when based upon certain tests.

Overall educational planning is the final function of measurement instruments. Certain instruments may provide tools for research, or give evidence of a school's accomplishments. In addition, planning may be aided by testing assumptions about given practices or by appraising instructional materials and methods. The high standards of a school or curriculum may be maintained through an efficient testing program.

Cook in Chapter 1, "The Functions of Measurement in the Facilitation of

Learning," edited by Lindquist (16) concluded the discussion on the functions of measurement by saying:

> The specific uses of an educational measuring device are limited largely by the ingenuity and insight of the designer and user...As in all science, advanced instruments suggest new uses, and new uses stimulate the creation of a better-designed instruments.

Several characteristics of a good instrument of measurement were stated by Army (2):

> It should be valid, reliable, and objective; so devised that it differentiates between various levels of attainment; easily administered and relatively inexpensive.

The validity of a test indicates the degree to which it measures what it claims to measure, while reliability indicates the accuracy with which it measures repeatedly. A discriminating test provides a spread of test scores by differentiating effectively between the good or poor student. An objective test refers to the extent to which the personal judgment of the scorer is eliminated from the rating situation. Other qualities to be sought in measurement situations, given by Furst (7), include appropriateness, control of irrelevant factors, and practicability.

Measurement instruments may be classified in several ways. One classification by Micheels and Karnes (18) is by the abilities of the students which the tests measure. An example is achievement tests which measure general knowledge of the student and his relative accomplishment in a specified area. Diagnostic achievement tests are valuable since they may be used to reveal strengths and weaknesses.

> By means of the classification of item content the test can be used diagnostically. That is, if the test builder is careful to analyze his objectives and to apportion a sufficient number of specific items to each objective, the total test score may be later broken down into part scores which furnish measures of the specific outcomes. Gross disparities in a pupil's achievement of the various

> objectives can be thus revealed and laid open to remedial treatment. (Remmers and Gage, 20).

Scholastic-aptitude tests, another example, are often called intelligence tests and measure the ability to do abstract thinking, such as understanding and manipulating verbal relationships. Other instruments measuring specific abilities include special aptitude tests, interest inventories, and character or personality instruments.

Measurement instruments may also be classified by type (Arny, 2). Oral tests, one type of measurement instruments, allow the student to verbally answer questions. Performance tests, a second type, may be either recognition or work tests and are primarily planned to measure skills. Check lists and questionnaires often call for the attitudes and opinions of the student. Essay-type tests allow the student to compose his own replies to the question, but such a free-response examination is often difficult to grade. Objective tests require the student to supply a specific answer or to choose the correct answer. Spafford (23) indicated that objective tests were more valuable than subjective or essay tests since more ground can be covered in an objective examination; grading is easier; the resulting scores are more uniform; pupils can locate their mistakes without difficulty; and composition, spelling, and legibility do not enter in to confuse the measurement of learning.

The pretest is another type of measurement instrument. A pretest may be defined as a test given prior to instruction in a certain course. Little has been written specifically on the theories of pretesting, although several authors agreed upon its value (Spafford, 23, Lindquist, 16, and Arny, 2). Arny (2) stated:

> Limiting measurement to testing after instruction accounts for much of the ineffectiveness of classroom teaching in home economics as well as in other fields.

Pretesting adequately fulfills certain of the functions of an instrument of measurement. Pretesting aids in planning and improving instruction in several ways. By determining the initial status of the students, the extent and precision of their knowledge of the subject are revealed as well as possible misconceptions. In this manner the instructor is better able to decide where learning should begin. Tyler in Chapter 2, "The Functions of Measurement in Improving Instruction," edited by Lindquist (16) said:

> It should be clear that the ends to be aimed at in a particular school or course should be ends not already attained by the student, but goals that can be built upon his previous background of skills, abilities, knowledge, attitudes, and interests.

Spafford (2) agreed with Tyler by saying:

> Pretesting is essential to determine what a particular group or individuals within a group may need to learn. Learning activites should then be set up.

In addition, Spafford (2) indicated that pretesting may motivate students by showing them the scope of learning essential for achieving the course objectives. Pretests also aid in measuring student growth during the course by establishing the base where the student began.

Pretests often are used for placement of students within sections of a course. When students are placed in homogenous groups, the teacher becomes more effective and can concentrate his efforts at one level.

In other instances, pretests are used for exemption from certain courses. If a student passes a pretest covering the information and objectives in a certain course, he is then allowed to bypass this course and proceed to a more advanced one. Many colleges and universities presently are using pretests for exemption and placement purposes in several fields, including home economics.

Gerberich (8) distinguished ten types of outcomes which a test may

measure: highly tangible outcomes such as skills and knowledges; outcomes intermediate in tangibility such as concepts, understandings, applications, and activities; and intangible outcomes such as appreciations, attitudes, interests, and adjustments. He concluded that no other outcome can be tested as satisfactorily by written objective tests, as adequately in all subject areas and at all educational levels, and as effectively by the use of practically all test item types as can knowledge.

The form of an objective test item is determined by the arrangement of the words, phrases, sentences, or symbols in the question; by the directions of response to the question; and by the provision made for recording the response. Objective test forms were classified into two categories by Ebel in Chapter 7, "Writing the Test Item," edited by Lindquist (16): the supply type or completion, to which the student responds by supplying the words, numbers, or other symbols which constitute the response; and the selection type or true-false, matching, and multiple-choice, to which the student responds by selecting a response from among those presented in the item.

All question forms have advantages and disadvantages which should be considered when constructing a test. Completion items are relatively easy to construct and are useful in measuring the rentention of specific points. However, they require more time to score and lack objectivity since questions are difficult to state in which only one specific answer is acceptable. Although this type of question tests recall rather than recognition, Wood (31) pointed out that earlier studies showed conclusively that equally well-constructed tests of recall and of recognition were so highly correlated that they clearly were testing the same basic factors.

True-false items may be quickly answered by the student and are readily

scored in an objective manner. Difficulty is often encountered in constructing items that are completely true or false without being obvious or including ambiguities, unimportant details, or irrelevant clues (Micheels and Karnes, 18).

Matching items are actually a variation of multiple-choice questions. They may be used for testing various outcomes, are relatively easy to construct, and can be scored quickly and objectively. Furst (7) indicated that it was best to use a small number of not too complex categories which are related but mutually exclusive.

Multiple-choice items are flexible and can be quickly scored objectively, although it may be difficult to devise items so that several decoy choices are plausible though incorrect. Multiple-choice items generally prove to give greater test reliability than other items. Micheels and Karnes (18) stated:

> When well constructed, the multiple-choice item is one of the best, if not the best, of the objective tests.

Ebel in Chapter 7, "Writing the Test Item," edited by Lindquist (16) gave a comprehensive list of general suggestions for writing test items:

1) Express the item as clearly as possible.
2) Choose words that have precise meaning wherever possible.
3) Avoid complex or awkward word arrangements.
4) Include all qualifications needed to provide a reasonable basis for response selection.
5) Avoid the inclusion of nonfunctional words in the item.
6) Avoid unessential specificity in the stem or the responses.
7) Avoid irrelevant inaccuracies in any part of the item.
8) Adapt the level of difficulty of the item to the group and purpose for which it is intended.
9) Avoid irrelevant clues to the correct response by pat verbal associations, greater length, any systematic formal differences between answer and distracters, overlapping questions, and use of all, none, or always.
10) In order to defeat the rote-learner, avoid stereotyped phraseology in the stem or the correct response.
11) Avoid irrelevant sources of difficulty.

Although a correction formula may be applied for guessing, Furst (7) and Wood (31) agreed that it is of little value. One possible solution suggested by Furst (7) instructed the students to guess when not completely sure of the answer but to avoid wild guessing.

Related Studies in Home Economics

This author was unable to find studies previously written on textile pretesting. Most studies reported on pretesting in home economics have been done at the graduate level as thesis problems and primarily involved laboratory classes, such as clothing construction or food preparation. This section of the review of literature will be limited to clothing construction pretests and other studies which present pertinent data involving textile information or relationships of knowledge and skill in clothing construction to certain other factors. A relationship is hereby assumed between knowledge of clothing construction and knowledge of textiles because of a certain homogenity of their subject matter.

In 1954, West (29) conducted a study at the University of Colorado to determine the relationship of high school homemaking courses on a student's achievement in beginning clothing construction. Her sample included 711 freshmen students enrolled in home economics during a three-year period. Only 54.4 per cent of the sample had had any homemaking in high school. West concluded from her study that there was a definite relationship between the amount of high school homemaking and achievement in college clothing courses.

A study by Lamborn (as described in Spafford and Amidon, 24) at four liberal arts colleges in Minnesota was made to determine the problems in

selection, care, and construction of clothing. She also studied the relationships between college classification, previous study and experiences, and the problems indicated by the women. A check list was used to determine the problems, while a questionnaire was used to gather the other data.

The findings of this study showed few differences in problems of clothing selection in relation to previous experiences in selecting clothes, or in clothing problems between freshmen and upperclassmen. Significant differences in the problems of which the women were aware occurred with differences in educational experiences in high school and 4-H Club work. Lamborn recommended class experiences for the individual student differ on the basis of previous training and experience regardless of the year in college.

Wright and Henkel (32) studied the effect of students' past experiences of achievement in a freshman clothing laboratory at Purdue University. Questionnaires and personal interviews were used to secure data on the students' experiences. The amount and type of previous experiences formed the basis for the placement of each student in one of the following groups:

Group I - Previous experiences in all fields of clothing (junior high school, senior high school, 4-H Club, and home experiences)

Group II - No 4-H Club work

Group III - No high school work

Group IV - Neither high school nor 4-H Club experience

Group V - No experience in any field.

Three phases of learning were studied: knowledge, as measured by paper and pencil tests; skill, as measured by actual sewing construction; and attitudes, as measured by the students' opinions.

From this study it was found that previous experience in clothing construction is a factor in achievement in the university course. The amount

rather than the type of previous experiences had an effect on the attitudes and achievement of students. The students who specialized in the area of clothing in the School of Home Economics did not show any greater achievement in clothing construction than those in other areas of specialization. A better attitude towards clothing construction at the university level was shown by students with previous experience.

A study was made by Lathrop (15) at Iowa State College to determine the effect of varying high school experiences on a student's achievement in college home economics. Students included in the sample were graduates of Iowa public high schools and were enrolled at Iowa State College in 1952. Information collected on 333 students included high school size, grade average, and pattern of courses, and freshman test scores. Progress was studied at the end of the first quarter of college and the end of a five-year period.

Lathrop concluded from the study that the size of the high school has little or no influence on college achievement for students enrolled in home economics, either over the first quarter or the five-year period. However, courses taken in high school have an influence on the final grade averages earned in college home economics. College-preparatory and math-science course patterns both were better preparation for college home economics than a home economics pattern in high school. He suggested this might be due to the heavy emphasis placed on science in college home economics in contrast to the high school home economics objectives.

A study by Davis (as described in Spafford and Amidon, 24) at West Virginia University was designed to determine the value of two freshmen placement tests in clothing and textiles as a placement measure, the

predictive value of these tests for future success in clothing and textiles courses, and the validity of these tests. The test used during 1948 and 1949 was developed at Iowa State College. The test used in 1950 and 1951 was the Cooperative Test in Textiles and Clothing, which is no longer available from the Educational Testing Service of Princeton, New Jersey.

Data available for 133 students were secured from the clothing placement tests, the profile sheets, and the scholastic records of the students. The following conclusions were reached:

1. There was a noticeable tendency for the placement test score to parallel the percentile rank a student made on the American Council of Education Psychological examination.

2. There was apparently a greater relationship between these two tests than between the placement test score and the grades made in the clothing and textiles course.

From the results of the study, Davis recommended that the clothing items and textile items be scored separately to show in what area or areas the student is weak or strong; and that students who receive a high placement test score on the textile section be exempt from elementary textiles.

Henkel and Serensy (10) conducted an experimental study of an introductory course in clothing and textiles at Purdue University. Three devices were used for placement of students in the class:

1. The Home Economics Orientation Test in Clothing and Textiles, developed in a five-year period by the staff members of that department at Purdue;

2. The American Council on Education Psychological Exams; and

3. The Experience Check List, constructed by one of the authors in cooperation with two 4-H Club leaders and a high school home economics teacher.

These three instruments were administered to the students prior to their period of class instruction. It was found that achievement as measured

by a reliable test was more basic in predicting course grades than was record of previous learning experiences.

Several studies at Iowa State College have been conducted regarding placement of students in the elementary clothing construction course. Saddler (21) in 1945 developed a pencil and paper test to determine the acquisition of information and a practical test to determine sewing ability. The coefficients of reliability obtained were .84 for the pencil and paper test, and .88 for the practical section, after the Spearman-Brown Formula had been applied. The correlation between the two sections of the test was .67. Students reported the number of garments they had made either independently or under supervision and these garments were given a weighted value. When the experience score was correlated with teacher-ranking of students at the end of three weeks instruction, a correlation of .45 was obtained. Saddler concluded that a .45 correlation was not sufficiently high to be valid for individual placement. She suggested further work be done to improve the method of obtaining this experience score.

Evans (6) continued the Iowa study in 1947 to determine whether a suitable substitute could be found for the Saddler practical test. The variables studied included performance on the mechanical aptitude test, The American Council on Education Psychological Exam for College Freshmen; the high school grade average; and both sections of the Saddler Construction Test. Evans found that the high school average and the intelligence test scores showed very little relationship to clothing construction as measured by the final examination score in the clothing construction class. She also found that the practical section of the Saddler test could be omitted from the prediction battery without serious loss.

Dickins and Ferguson (5) conducted a study for the Agricultural Experiment Station at Mississippi State University in 1961 to determine the kinds, amounts, and uses of selected outer garments owned by teen-age girls; preferences for fibers in selected garments; and marketing factors affecting type and kinds of garments owned. Included in the study were 1220 high school girls, principally in the eleventh grade, which were divided into four groups; 289 white girls from rural areas, 551 white girls from urban areas, 163 Negro girls from rural areas, and 217 Negro girls from urban areas.

Data indicated the majority of girls in all four groups had had home economics in school which included some work in clothing. Three-fourths of the rural girls, white and Negro, had been members of a 4-H club, with 79 per cent of these having completed clothing projects. Only one-third of the urban girls had been 4-H members, with 84 per cent of these having completed clothing projects.

Each girl was asked to identify the fiber content of eight fabric samples. Eighty-six per cent identified less than half of the samples correctly. There was little difference in abilities of girls in the four groups judging the samples. The per cent of girls correctly identifying each of the eight samples was as follows: cotton organdy, 17; rayon velvet, 10; cotton glazed print, 78; Dacron and cotton print, 2; nylon organdy, 60; cotton velveteen, 12; cotton corduroy, 28; and Orlon and wool blend, 3. Many girls did not distinguish between fiber and fabric.

Color, becomingness, and fit were ranked by the girls as the most important features in their clothing, while fiber and weave ranked lowest in importance. Dickins and Ferguson concluded that the qualities of the most

common natural and man-made fibers, including care of these and purposes for which each is best suited, should be basic information in clothing courses for teen-agers.

In 1951 at Iowa State College, Davison (4) developed a vocabulary test on textile finishes. This test was administered to 54 students before they enrolled in a textile course and to 114 students after they had completed a unit on textile finishes in the elementary textile course. The test proved to be sufficiently sensitive to determine changes in students' understandings of terms, as indicated by the mean score of 48.16 for students who had not taken the course, and 90.14 for students who had completed the unit. When corrected by the Spearman-Brown formula, a coefficient of reliability of .8091 for the pretest and .8495 for the final test was obtained. Davison recommended the revision or substitution of definitions which did not prove to be efficient distractors in the test.

A study was conducted by Hunt (12) in 1956 to improve the textile finishes vocabulary test of Davison (4) by including questions which involved the ability to solve problems. The test score was obtained by totaling the number of incorrect responses: wrong choices, those responses placed in blanks where no responses were appropriate, or omission of the correct response. A mean score of 36.569 was obtained for the 81 students in the sample. The coefficient of correlation, corrected by the Spearman-Brown formula, was .646. An item analysis indicated 84 reasons and solutions in the test items did not discriminate between the high-performance and low-performance groups, whereas 181 items had some ability to discriminate between the students used in the sample. Hunt concluded that the correct solutions appeared to be easier for students than choosing the reasons for that solution.

Summary of Related Studies

Pretests in clothing construction have been effective instruments for placement of students in college clothing construction courses (Henkel and Serensy, 10; Saddler, 21; and Evans, 6). Greater reliability was achieved through use, analysis, and revision of the pretests.

Contradictory findings were reported in several of the studies relating achievement in college clothing construction courses to other factors. West (29) found that the number of high school home economics units did influence the achievement in college clothing construction. Findings by Wright and Henkel (32) indicated performance in the college clothing construction course was influenced more by the amount rather than the type of previous experiences in clothing construction. Other studies by Saddler (21) and Henkel and Serensy (10) showed little relationship between these last two factors. In Evans' study (6) intelligence scores and high school grade averages showed little relationship to college clothing construction achievement. Lathrop (15) found that achievement in a general home economics college curriculum was influenced more by college-preparatory and math-science high school course patterns than by high school home economics courses.

When asked to identify the fiber content of common fabric samples, few Mississippi high school students, in a study by Dickins and Ferguson (5), were found to know these elementary textile facts. Fiber and weave were ranked by the girls as the least important aspects of their clothes while color, becomingness, and fit were most important.

Studies devoted specifically to testing textile knowledge have been limited. Vocabulary items were constructed in a textile finishes test

developed by Davison (4), while Hunt (12) constructed problem solving items, as well as vocabulary items, in a textile finishes test. Davison's test was administered both as a pretest and a test, and it differentiated effectively between the students who had not taken the course and those who had completed the unit on textile finishes.

PROCEDURE

Development of the Test

In constructing a pretest designed to measure students' knowledge of textiles, the previous learning experiences which were available to the students and which might have been influential in their cognition should be considered. Learning experiences related to textiles may be obtained through clothing classes in junior and senior high school, through 4-H clothing projects, and outside supervised learning situations as in personal experiences as a family member or as a consumer. Therefore, the objectives and the source materials pertaining to textiles of the junior and senior high school clothing classes and of the 4-H clothing projects in Kansas were reviewed before the test questions were constructed. Additional information and suggestions were obtained in consultations with instructors in education and high school home economics.

Emphases which serve as guides for teaching clothing classes in Kansas were listed in the Kansas Tentative Guide for Homemaking Education, 1961 (14). The emphases were classified according to subject matter into main objectives. The objectives of the 4-H clothing projects were given in the leaders' guides found in the 4-H Clothing Leaders' Handbook. Additional clarification of 4-H

objectives in clothing was obtained in an interview with Miss Donice Hawes, Kansas Extension Specialist in Clothing and Textiles. She stated that more textile information was given to 4-H members on labeling, quality of fabric, and care than on fibers and finishes. An analysis of the objectives in the public school and 4-H programs proved them to be quite similar. Of the list of objectives in Table 1, compiled by the author from a review of the teaching guides, only the starred objectives (*) were considered particularly significant to textiles.

Table 1. Comparison of high school and 4-H objectives in teaching clothing.

High School Clothing Objectives	4-H Clothing Objectives
1. To learn how to improve one's personal appearance.	1. To learn how to improve one's personal appearance.
2. To develop ability in wardrobe planning.	2. To learn how to plan a wardrobe.
3. To develop skills in sewing construction and in use of the equipment.	3. To develop skills in sewing construction and in use of the equipment.
*4. To develop good judgment in shopping for garments.	*4. To learn how to shop wisely for garments.
*5. To learn how to buy fabrics wisely.	*5. To learn how to buy fabrics wisely.
*6. To learn how to care for clothing.	*6. To learn how to best care for fabrics.
	7. To gain personal satisfaction from sewing.
	8. To develop leadership in 4-H.

*Objectives particularly significant to textiles.

To further assure that the test questions adequately covered the textile facts which might be known, preliminary reading was done in the source materials of both high school clothing classes and 4-H clothing projects. Textbooks which were suggested by the Kansas Tentative Guide for Homemaking Education, 1961 (14) for use in junior and senior high school clothing classes were read to determine the possible textile subject matter being taught. The booklets for 4-H members in clothing projects were examined for similar content.

From these two sources, supplemented by general textile information which was believed to be widely available to the consumer, a list of areas of textile information believed to be of significant importance was compiled. This list was used as a guide in writing the test questions. The specific areas of textile information which were used included:

1) The outstanding properties of selected fibers with regard to serviceability and comfort.
2) The physical source of certain fibers.
3) Certain characteristics of significant yarns; and differentiation of textured yarns, fibers, and fabrics.
4) Selected trade names of man-made fibers within certain generic groups.
5) Methods of caring for certain fibers and fabrics.
6) The characteristics and differences in construction of fabrics.
7) Textile information on labels available to the consumer.
8) The definition and characteristics of certain finishes applied to fibers and fabrics.

The completed schedule consisted of three sections: the questionnaire, the pretest, and the answer sheet. Copies of these are included in Appendix A, p. 65.

A questionnaire was developed to secure information about the student's background. Questions were asked regarding certain socio-economic factors believed to offer possible relationships to a student's knowledge of textiles. The student was asked to respond to the socio-economic questions by checking the appropriate answer or by supplying a short, definite answer. This facilitated the later classification and analysis of these factors.

A diagnostic achievement test was constructed since it provided a method of testing students' knowledge in several areas of textiles. Questions were developed to cover the textile facts believed to be basic and pertinent, as shown in the preliminary reading and study, for each of the specified areas of textile knowledge. Multiple-choice, matching, and true-false questions were used because they provided objective items which could be easily scored.

A separate answer sheet was constructed to facilitate scoring and to allow the test booklet to be reused if desired.

The completed pretest questions, answer sheet, and questionnaire were read and improvements were suggested by the graduate students in the Clothing and Textiles department and by the committee members.

The revised and approved schedule was then pretested on a trial group of eleven Kansas State University students who were not in the final sample and had not had a college textiles course. This pretesting was done to assure the clarity of the questions, to observe the reaction of the students, and to determine if the students were responding in the manner desired.

The Sample

Students in five sections of a selection of clothing course at Kansas State University were selected as the sample. This group was selected for several reasons. It offered a sample of significant size. Since this study was to measure college students' knowledge of textiles prior to a textiles course, the students to whom the final schedule was administered should not have had a college course in textiles but should be likely to take a textiles course. Both of these factors were assumed to be fulfilled, since the selection of clothing course is a freshman course preliminary to the beginning textiles course required of most students majoring in the School of Home Economics.

Administration of the Schedule

The schedule was administered to 104 of the 112 students in attendance in the five selection of clothing classes on May 23 and 24, 1962. Eight girls were excused as they had taken or were taking a textiles course. Only 103 of the 104 schedules were analyzed since one student did not complete the test.

The purpose and plan of this study were explained to the students in each of the sections and their cooperation was asked. The three sections of the schedule were given to each student, with the answer sheet and questionnaire being numbered to prevent a possible mix-up of information. The students were allowed the full 50 minutes of scheduled class time to complete the test.

Statistical Analysis of Data

The scores for the entire or total pretest, as well as for the eight areas of textile knowledge, were analyzed by the descriptive method, using summations, averages, and percentages.

The questionnaire answers were organized into classes or groups and the data on the socio-economic factors were analyzed by the descriptive method also. The Kruskal-Wallis one-way analysis of variance by ranks test, as described by Siegel (22), was used to determine if there were significant relationships between the socio-economic factors and the students' total scores on the textiles pretest. For example, the Kruskal-Wallis test statistic (H value) was computed to determine whether the number of years of participation in 4-H clothing projects was related to the students' total pretest scores with a significance above the 5 per cent level of confidence. Similar comparisons were made for the other socio-economic factors. The Kruskal-Wallis test is a nonparametric technique for testing the null hypothesis that independent samples have been drawn from the same continuous population. The significance level α, or the probability of mistakenly rejecting the null hypothesis, was set at .05.

FINDINGS

Results for the Textile Pretest Questions

A pretest designed to measure college students' knowledge of textiles prior to instruction in a college textiles course was administered to students in the selection of clothing classes at Kansas State University in the spring of 1962. The results of the pretest and questionnaires of 103 students were

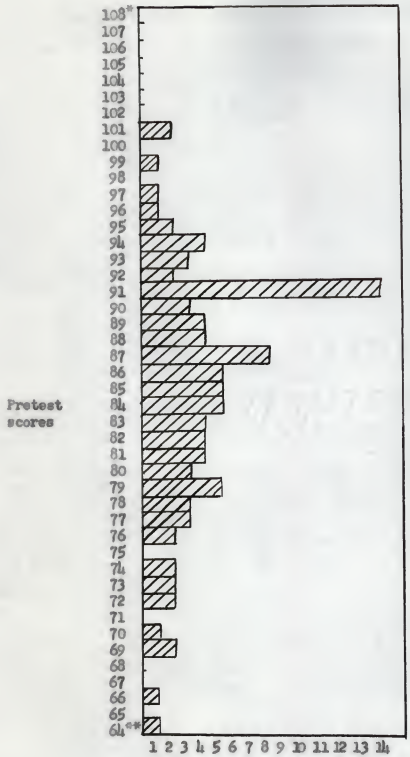
analyzed. The answer sheets for the pretest were scored using an answer key (Appendix A, p. 65). Tabulations of answers to the pretest are given in Appendix B, p. 79 . Each answer was given a value of one point. A response was checked as incorrect if the student gave a wrong answer or failed to answer the question. The student's total score consisted of the number of incorrect responses subtracted from the total possible score of 108.

The total scores of the students ranged from 101 to 64, which was a range of 38 points. The average test score or mean was 85.02, while the mode was 91 with 14 students receiving the score (Fig. 1).

The reliability of the pretest was measured by computing the coefficient of correlation between the odd- and even-numbered items on the test. The coefficient of the textiles pretest was .54 and when corrected for length by the Spearman-Brown formula the coefficient of correlation became .70. A reliability coefficient of .50 for group prediction and .85 to .90 for individual prediction is accepted by several authorities. A higher coefficient of correlation for this test would be desirable and could possibly be achieved by increasing the number of test items.

Pretest questions were asked in each of the eight specified areas of textile knowledge, so the strengths and weaknesses expressed by students could be determined. The score of the student in each of the eight areas of textile knowledge was recorded and analyzed, in addition to the total score.

To determine the students' knowledge of the outstanding properties of selected fibers with regard to serviceability and comfort, nineteen questions were asked. Scores ranged from 18 to 8 out of a possible score of 19, with



*Highest possible score

**Lowest score received

Fig. 1. Distribution of the total pretest scores of 103 college students.

the average score being 14.81.

When asked to identify a widely used blend with easy-care properties, 95 per cent of the students expressed their familiarity with this property found in the blend of Dacron and cotton.

Static electricity, which may affect the appearance and comfort of a garment, was recognized by 92 students as accumulating most readily in fabrics of nylon.

Although moisture absorbency was chosen as affecting the coolness and comfort of a summer garment by 90 students, in a following question cotton was selected by only 55 students as being the most satisfactory fiber of those listed for a cool and comfortable garment on a hot, damp day. Dacron was given as the answer by 44 students, while wool was selected by 3 and nylon by 1.

When asked to select a property of a cotton blouse without a wash-and-wear finish, only 59 students chose moisture absorbency. Twenty-one students mistakenly chose "sensitive to low pressing temperatures" and 19 selected "pills easily" as answers.

When asked about wrinkle resistant properties, all of the students indicated knowing that cotton was not naturally resistant to wrinkling. Seventy-three students correctly selected Dacron as being wrinkle-resistant, 22 believed rayon to be naturally wrinkle-resistant, and 8 selected linen as such.

Pilling was correctly defined as "the forming of balls on the surface of a fabric from abrasion and the working loose of fiber ends" by 85 students. Pilling was selected as a property of cotton by only 19 students, in an earlier question.

In order to determine if they knew certain fiber properties, students were asked to indicate as either true or false the four statements listed concerning properties for each of three fibers. Greater familarity with properties of wool than with properties of nylon was expressed by students, while properties of linen were least familiar of the three. This was shown in a total of 72 incorrect answers concerning wool, 96 concerning nylon, and 101 concerning linen.

The warmth of woolen fabrics was a fiber property known by all of the students. Wool was recognized as being elastic, resilient, and tending to resist wrinkles by three-fourths of the students, and as being absorbent to moisture by two-thirds of the students. The resistance of wool to moths was known by nine-tenths of the students.

Nylon was recognized as accumulating static electricity and tending to grey or pick up other colors in laundering by a ratio of approximately 9 out of 10 students. A ratio of 2 out of 3 students selected nylon as being moth resistant and retaining heat-set pleats or tucks.

Linen was selected as being lint-free, as well as strong and durable, by 85 per cent of the students. High moisture absorbency and little resistance to wrinkling were two other fiber properties of linen, but were selected by only 65 per cent of the students.

To determine knowledge of the physical source of certain fibers, students were asked to select the correct classification of plant, animal, or man-made for a list of 10 fibers. The correct sources of all 10 fibers were given by over half of the students. The average score was 9.25 and scores ranged from 10 to 2. However, low scores of 2 and 3 were received by only 3 students and the other scores were 7 or above.

Knowledge of sources of certain fibers was indicated by most of the students. Readily identified by the students were cotton as a fiber from a plant, wool and mohair as fibers from animals, and acetate, nylon, Orlon, and rayon as man-made fibers. The sources of cashmere, silk, and linen fibers were least familiar to students, although only 16, 14, and 12 incorrect responses, respectively, were given. Cashmere, an animal fiber, was selected as a man-made fiber by 14 students; while silk, also an animal fiber, was designated as a plant fiber by 13 students. Linen was selected by 10 students as a man-made fiber rather than a plant fiber.

In order to determine the students' knowledge of yarns three questions were asked about characteristics of certain yarns, and nine questions were asked to determine the students' ability to differentiate between yarns, fibers, and fabrics. On the section concerning yarn characteristics 35 students answered all three questions correctly, while only 5 missed all three questions. The average score was 2.08. On the section to differentiate between yarns, fibers and fabrics, the average score was 6.24 out of a possible 9 points, and the scores ranged from 9 to 1.

Metallic yarns, when covered by a plastic film, were recognized as being resistant to tarnishing by over three-fourths of the students. However, "stiff because of their thickness" was an answer selected by 19 students.

Textured nylon yarn, when used in anklets, was selected as stretching to fit several sizes by 79, or over three-fourths, of the students. Textured yarns were indicated as being non-absorbent to perspiration by 18 students and as being weaker when wet by 5 students. Two students gave no response.

The definition of Ban-lon, a trade name for garments made of textured yarn, was correctly chosen by 57 per cent of the students. Incorrect

definitions of a full-fashioning process for knitting and a lamb's wool fiber were selected by 33 and 9 students, respectively.

When asked to differentiate between textured yarns, fibers, and fabrics, the students frequently mistook the two textured yarns, Helenca and Ban-lon, for fibers. In addition, several students mistook them for fabrics. Ban-lon was correctly identified as textured yarns by three-fourths of the students, while Helenca was indicated as such by less than half of the students.

Fibers were often confused as being fabrics. The three fibers, Dacron, nylon, and Orlon, were erroneously believed to be fabrics by 35, 24, and 10 students, respectively. Orlon was selected as a textured yarn by 34 students. Nylon was the most readily identified of the three fibers, as it was designated as a fiber by 79 students. Dacron was selected as a fiber by 63 students and Orlon was selected by 59 students.

Fabrics were mistaken more for textured yarns than for fibers. Jersey was selected as a textured yarn by 35 students, while pique, organdy, and gingham were believed to be textured yarns by 16, 10, and 6 students. Gingham was the most familiar of the four fabrics included in the list, for it was correctly identified by 97 students. Organdy was identified as a fabric by 88 students, while pique was recognized by 78, and jersey was identified by only 59 students.

When asked to identify the trade names of man-made fibers with their generic classifications, students expressed a lack of knowledge. Only 1 student answered all 5 questions correctly, while 7 did not select any of the correct trade names. The average score on this section was a low 2.15.

The trade name of Dacron was correctly selected as a polyester fiber by two-thirds of the students, which meant that polyester was the most

familiar of the five generic classifications given. Orlon acrylic, Arnel triacetate, and Lurex metallic were correctly identified by less than half of the students. Lycra was selected as a spandex fiber by less than one-fourth of the students.

Misconceptions in identifying the correct trade name of a man-made fiber with its generic classification were revealed. Nylon and Arnel were selected by 21 and 15 students as polyester fibers. For the generic term of acrylic, Dacron was selected by 27 and Lycra by 22 students. For the triacetate classification Acrilan was chosen as frequently as Arnel, 45 to 43, while Orlon was chosen by only 13 students. And under the metallic classification, Dynel was selected as frequently as was Lurex, the correct answer, while 17 students selected Acrilan. Lastex was mistakenly chosen as a spandex fiber in a ratio of 4 to 1 over Lycra, the correct answer. No responses were given by several students for each of the five generic terms.

To determine the students' knowledge of methods of caring for certain fibers and fabrics, questions with a total of 21 points were asked concerning laundering, pressing, and dry-cleaning. Twelve students answered all 21 questions correctly. Seven questions were the largest number missed. The average score was 19.01.

A high ironing temperature was selected by all but 3 of the students as the usual cause of an iron sticking to or making ripples on an acetate blouse. The reason for using a press cloth when pressing woolen garments was recognized by 82 students as preventing the fabric from becoming shiny. Keeping the iron from sticking to the surface of the wool fabric and preventing shrinkage were reasons selected by only 17 and 7 students.

When asked why care should be used in laundering rayon, almost half

of the students seemed unaware that rayon was weaker when wet than when dry. This was indicated by the selections of 23 students reporting that rayon pills with agitation, of 12 students reporting that rayon is sensitive to low washing temperatures, of 6 students reporting that it fades easily, and of 3 students giving no response.

"Hand wash, rinse, hang while dripping wet to dry, avoiding wringing and twisting" was selected by almost three-fourths of the students as the method of laundering an easy-care cotton blouse that would require the least touch-up pressing.

Knowledge of the correct laundering temperatures for garments made of cotton, wool, nylon, and rayon was expressed by students. Hot water for laundering a cotton blouse and lukewarm water for both nylon hose and a wool sweater were selected by almost all of the students. Hot water rather than lukewarm water for laundering a rayon dress was selected by only 10 students.

Knowledge of the most satisfactory temperature setting on an iron for garments of cotton, nylon, Dacron, and linen was expressed by most students. A medium to high temperature for pressing a cotton skirt and a low temperature for pressing a nylon blouse were selected by almost all students. Less familiarity with pressing temperatures for Dacron and linen was indicated by some students, as a medium to high temperature for Dacron was selected by 13 students and a low temperature for linen was selected by 12 students.

Knowledge concerning the necessity of dry-cleaning garments of wool, cotton, silk, and nylon was also expressed by most students. All students designated that dry-cleaning was usually preferred for wool, with 93 replying that it was preferred for silk also. All students indicated that

dry-cleaning was usually not preferred for cotton, and 97 said it was not preferred for nylon.

Knowledge of the melting properties of cotton, linen, acetate, and nylon when pressed at high temperatures was indicated by students. However, a misconception that Dacron, actually a heat-sensitive fiber, would not melt at high pressing temperatures was expressed by 36 per cent of the students. Cotton and linen were selected as those fibers which do not melt at high pressing temperatures, and acetate and nylon as those fibers which do melt.

To determine their knowledge of characteristics and differences in construction of fabrics, the students were asked several questions totaling 19 points. Scores ranged from the possible score of 19 to 7, with the average being 14.15. Only 4 students responded correctly to all 19 questions.

Characteristics of fabrics constructed by weaving, felting, and knitting processes were known by some of the students. Knitting was selected as the method of construction resulting in a fabric which is pliable, elastic, and adaptable to form-fitting garments by all but 18 of the 103 students. Knitting was also recognized by 80 of the students as the method of construction which should have the greatest resistance to wrinkling, while weaving was chosen by 14 students and felting was selected by 9 students. Felting was identified as the method of construction resulting in fabrics rated low in strength by only 54 students, while knitting was selected by 42 students.

Knowledge concerning the differences in construction of fabrics was questioned in the matching of the names of 4 main weaves with their correct description. The descriptions of plain and satin weaves were identified

more frequently by the students than descriptions for twill and pile weaves. Twill and pile weave descriptions were interchanged by several students. Twill weave was matched with the description of pile weave by 13 students, while 14 students identified pile weave as twill.

Twill weave was selected by only 57 students as producing a more closely woven, heavier, and sturdier fabric than either plain or satin weave, when yarns of the same size and quality were used. Satin weave was chosen by 31 students, and plain weave by 14 students.

Misconceptions in identifying the weave of 7 common fabrics were revealed by the students. The fabrics whose weaves were most familiar were sateen, a satin weave; terry cloth, a pile weave; and cotton broadcloth, a plain weave. Corduroy and velveteen were correctly identified as pile weaves by only two-thirds of the students. Corduroy was most often incorrectly selected as a twill weave, while velveteen was mistakenly identified as plain, twill, and satin weaves. Denim and gabardine were chosen as twill weaves by less than half of the students, and were most often mistakenly selected as plain weaves.

Some familiarity with fabrics whose designs have been achieved during construction of the fabric was revealed by the students. Gingham was selected by 86 students as a fabric whose design was achieved by using different colored yarns, while faille, a fabric usually of solid color, was chosen by 13 students. Shantung was chosen by 79 students as a fabric whose design was obtained by using different types of yarn, while flannel was chosen by 18. Marquisette was designated by 59 students as a fabric whose design was achieved by the spacing of yarns, although chiffon was chosen by 39 students. And brocade was selected by 90 students as a fabric

whose design was obtained by varying the interlacement of yarns, while gingham and cotton broadcloth each were chosen by 6 students.

To determine students' knowledge of textile information on labels available to the consumer, questions totaling 13 points were asked. Twenty-one students correctly answered all the questions. The scores ranged from a possible score of 13 to 8, and the average score was 11.21.

Familiarity with labeling information was, in general, expressed by the students. Virgin wool, a term often appearing on labels, was indicated by 85 per cent of the students as meaning wool fibers which have not been used previously in a garment.

Students were asked to indicate whether or not certain information is usually found on dress and coat labels or hang-tags. Twenty-six students were unaware that the generic names of the fibers used are included on the dress label, while 20 were unaware that this information is found on the coat label or hang-tag. Over 85 per cent of the students indicated that on dress labels neither the weave of the fabric is indicated nor the fiber content of the interfacing, but that the percentage of each fiber used and the special finishes given to the fabric are stated. All students indicated that the garment manufacturer or brand is stated on dress labels.

On coat labels or hang-tags all students except 1 indicated that the garment manufacturer or brand is given, while the length of wear expected from the coat is not stated. Ninety-seven students indicated that the percentage of each fiber used is included, 72 students replied that the fiber content of the lining is stated, and 61 students indicated that the manufacturer of the woven cloth is not required.

To determine the students' knowledge of the definition, and

characteristics of certain finishes applied to fibers and fabrics, 9 questions were asked. Only 4 students answered all 9 questions correctly, while the lowest score was 3, received by 2 students. The average score was 6.17.

The correct definition of crease-resistant was given as "to resist and recover from wrinkles which normally occur during use" by all students except one. The term finishes was correctly defined by 89 students as the temporary or permanent treatments which have been applied to enable fabrics to perform a certain function more effectively. Eight of the 14 incorrect responses defined finishes as the appearance of fabrics due to the method of dyeing or printing.

Students were often unfamiliar with the characteristics which certain finishes gave to fibers or fabrics. A cotton fabric with a wash-and-wear finish was indicated by only two-thirds of the students as being more sensitive to heat than a cotton fabric without a wash-and-wear finish, although this type of fabric was selected by 17 students as being more absorbent than a cotton fabric without a wash-and-wear finish. Mercerized cotton thread was selected by only 57 students as being more lustrous than unmercerized thread, while it was believed to be stiffer than unmercerized thread by 33 students. Vat-dying was selected as a finish imparting colorfastness to washing and to light by 54 or slightly over half of the students, although the mercerized finish was chosen by 40 students. Sanitized was the trade name of a finish for making a fabric resistant to damage from perspiration and bacteria selected by 73 students, while Mitin and Ban-Care each were selected by 10 students, Milium was selected by 8, and no response was given by 2 students. Familiarity with Tebilized, Wrinkle-shed, and Everglaze as trade names of crease-resistant finishes was expressed by most students,

for only 11 incorrect answers were given.

Sanforized was recognized by all but 2 students as a finish referring to a treatment to control shrinkage. However, only 72 students stated that a Sanforized garment will not shrink more than 1 per cent, while 29 incorrectly stated that no further shrinkage will occur. Although familiarity was expressed with Sanforized as a shrinkage control treatment for cotton, the shrinkage control treatments of Sanforlan and Lanaset were identified as being applied to fabrics of wool by only 31 or less than one-third of the students. Linen, nylon, and cotton were the fabrics chosen by 27, 21, and 18 students, respectively. No response was given by 6 students.

Results for the Socio-Economic Factors

The socio-economic factors analyzed in this study included occupations and educational levels of parents, family size, and selected home and community information.

The occupations of fathers were classified under ten headings established by the United States Employment Service (28). For example, 41 fathers, either farmers or ranchers, were grouped as holding agricultural occupations, and the average total pretest score of the 41 students whose fathers were in this group was 84.29, as shown in Table 2. The second largest occupational group was managerial and included 21 fathers. None of the fathers' occupations was classified as service jobs. The Kruskal-Wallis one-way analysis of variance by ranks test was computed to determine if the difference between groupings was significant at the 5 per cent level. No significant difference was found in the students' total pretest scores between each of the classifications for fathers' occupations. When the

Table 2. Number of students and average total pretest scores by fathers' occupation.

Father's occupation	No. of students	Average total pretest score
Professional	8	80.62
Semi-professional	3	89.00
Managerial	21	88.04
Clerical	2	80.50
Sales	7	83.57
Agricultural	41	84.29
Skilled	8	84.00
Semi-skilled	7	84.00
Unskilled	6	89.16

occupations were grouped into professional, semi-professional, and managerial; clerical and sales; agricultural; and skilled, semi-skilled, and unskilled, the students' average total pretest scores were 86.28, 82.88, 84.29, and 85.47, respectively. When analyzed statistically, the students' total pretest scores within the four groups were not significantly different.

The occupations of the students' mothers were found to have no significant effect on the students' performance on the textiles pretest. A difference of less than 1 point was noted in the average total pretest score of 84.56 for the 67 students whose mothers were full-time homemakers in comparison with the average total pretest score of 85.88 for the 36 students whose mothers were employed outside the home. Of the 36 mothers working outside of the home, 14 held professional occupations, 16 held clerical occupations, 4 held sales occupations, and 2 held service occupations. Students' average total pretest scores when grouped by the types of employment of their mothers were 86.00, 85.37, 87.50, and 86.00, respectively.

To determine the educational levels of the parents, students were

asked to check the last year of schooling completed by their fathers and mothers. More mothers than fathers had graduated from college, had attended college 1 to 3 years, and had graduated from high school. More fathers than mothers had completed advanced schooling beyond a Bachelor of Science degree (Table 3). When students were classified by the seven educational levels of their fathers or of their mothers, the difference in the students' total pretest scores between classifications was not found to be significant by the Kruskal-Wallis test. Neither was the difference significant when the educational levels were grouped by schooling up to and including graduation from high school and schooling beyond high school graduation; nor when grouped into four levels by 3 years or less of high school, graduation from high school, 1 to 3 years of college or trade school, and graduation from college or advanced schooling.

Table 3. Number of students and average total pretest scores by educational levels of fathers and mothers.

Educational levels of fathers and mothers	No. of students		Average total pretest score of students	
	Father	Mother	Father	Mother
Grade school	9	1	87.22	79.00
High school, 1-3 yrs.	13	4	85.69	85.25
High school graduation	28	43	86.25	86.76
College, 1-3 yrs.	24	31	84.87	84.16
College graduation	15	17	82.13	82.35
Trade or business school	3	4	86.00	83.00
Advanced schooling	11	3	83.36	88.66

Family size was found to have no significant effect upon the students' performance on the total textiles pretest. Sixty-eight students were from families with one to three children, while the remaining students were from

families with four or more children, as seen in Table 4. The difference between the students' total pretest scores for each of the six classifications of one, two, three, four, five, or six or more children was not found to be significant by the Kruskal-Wallis test. Other classifications by family size revealed no significant difference in the total pretest scores of the students.

Table 4. Number of students and average total pretest scores by number of children in the family.

Children in family	No. of students	Average total pretest score
One	8	87.87
Two	23	83.60
Three	37	85.02
Four	16	82.56
Five	7	89.85
Six or more	12	86.33

The students were also asked to indicate the number of children in their family who were still considered dependents of their parents. Only 5 students indicated that their parents had no dependent children. Seventy-eight students were from families with one to three dependent children, and 20 students were from families with four or more dependent children (Table 5). When the students' total pretest scores within the six separate classifications of none, one, two, three, four, and five or more dependent children were analyzed statistically by the Kruskal-Wallis test, the difference was not significant. When grouped into two or less dependent children and three or more dependent children, there also was no significant difference in the students' total scores on the pretest.

To determine the location of their home community, the students were

Table 5. Number of students and average total pretest scores by number of dependent children in family.

Dependent children in family	No. of students	Average total pretest score
None	5	86.00
One	23	84.04
Two	31	84.70
Three	24	84.79
Four	12	85.00
Five or more	8	89.25

asked to check either farm, rural non-farm, town, city over 2,500, or large city over 25,000. Because only 3 students indicated their homes were in a rural non-farm area, these were included in the farm grouping. The differences between the average total pretest scores in the four final classifications varied only 1.38 points or less, as shown in Table 6. The location of the home community did not affect the students' performance on the textiles pretest.

Table 6. Number of students and average total pretest scores by location of home community.

Location of home community	No. of students	Average total pretest score
Farm and rural	41	84.56
Town	17	85.94
City over 2,500	21	85.61
City over 25,000	24	84.66

To determine the size of the high school attended, students were asked to check the appropriate size of their high school graduating class as either 1 to 49, 50 to 99, 100 to 500, or over 501 (Table 7). The difference in the students' total pretest scores in the four separate classifications

Table 7. Number of students and average total pretest scores by size of students' high school graduating class.

Size of high school graduating class	No. of students	Average total pretest score
1 to 49	39	87.05
50 to 99	17	82.23
100 to 500	33	84.51
Over 501	14	84.00

was not statistically significant. When the 64 students whose high school graduating class was 50 or above were grouped, their average total pretest score was 83.79. This score was 3.26 points lower than the 87.05 average total pretest score of the 39 students whose graduating class was smaller than 50. The difference in the students' total pretest scores in the two groups was found to be statistically significant at the 5 per cent level by the Kruskal-Wallis test, indicating that the students from the small high school with 1 to 49 in their graduating class performed significantly better on the pretest than those from a high school with a graduating class of 50 or more. (Appendix C, p. 86).

To determine the amount of clothing instruction they had received in school, students were asked to indicate the number and length of clothing class units which they had taken in junior high and senior high school. Only 6 students had received no instruction in clothing and 8 had less than one semester's work, while 11 had one semester, 41 had two semesters, and 37 had three or more semesters, as shown in Table 8. There was no significant difference between the students' total pretest scores in the five separate classifications. The difference in pretest scores was significant, however, when students were grouped into those with one semester or less of clothing

instruction and those with two semesters or more (Appendix C, p. 86). The 78 students with two semesters or more of high school clothing instruction performed significantly better on the pretest, as shown by their average score of 85.74, than the 25 students with one semester or less of instruction whose average score was 82.80.

Table 8. Number of students and average total pretest scores by amount of high school clothing instruction.

Amount of high school clothing completed	No. of students	Average total pretest score
None	6	80.33
Less than 1 semester	8	80.25
1 semester	11	86.00
2 semesters	41	86.12
3 or more semesters	37	85.32

When asked the number of years of 4-H clothing projects which they had completed, only 55 students, or slightly over half, indicated having had such projects (Table 9). Seventeen of these students had completed 9 or more years of clothing projects. The 48 students without 4-H instruction had an average total pretest score of 83.93, while those with 4-H instruction had an average total pretest score of 85.98. When the scores of the students within these two groups were analyzed by the Kruskal-Wallis test, the difference was not found to be significant. When grouped into students having no 4-H, 1 to 2 years of 4-H, 3 to 4 years, 5 to 6 years, 7 to 8 years, and 9 or more years, the students' total pretest scores within these groups were again not significantly different.

The students were asked to indicate the approximate percentage of their skirts and blouses which they had constructed. Only 17 students said they

Table 9. Number of students and average total pretest scores by number of 4-H clothing projects completed.

Number of 4-H clothing projects completed	No. of students	Average total pretest score
None	48	83.93
1 to 2 years	11	85.09
3 to 4 years	8	86.12
5 to 6 years	8	85.25
7 to 8 years	11	86.27
9 or more years	17	86.64

made none of their skirts and blouses, while 6 indicated constructing more than 75 per cent of their skirts and blouses (Table 10). There was a span of 5.75 points between the average total pretest scores of these two groups. A statistical analysis showed the difference between students' total pretest scores in the five classifications of none, 1 to 25 per cent, 26 to 50 per cent, 51 to 75 per cent, and 76 to 100 per cent was not significant. When students were divided into two groups of those who made less than 25 per cent of their skirts and blouses and those who made more than 25 per cent, the average total pretest scores were 83.80 and 86.01, respectively. When analyzed by the Kruskal-Wallis test, the difference between the students' total pretest scores in the two groups were found to be significant at the .05 level, indicating that the students who sewed more than 25 per cent of their skirts and blouses did significantly better on the textiles pretest (Appendix C, p. 86).

When asked about the help which they received in sewing, 83 students indicated they had received assistance in sewing from some other person. Approximately 78 per cent or 65 of these students said their mothers had helped them, and 30 of the 65 indicated that both their mothers and other

Table 10. Number of students and average total pretest scores by percentage of own skirts and blouses constructed.

Percentage of own skirts and blouses constructed	No. of students	Average total pretest score
None	17	82.58
1 to 25 per cent	29	84.51
26 to 50 per cent	21	84.14
51 to 75 per cent	30	86.86
76 to 100 per cent	6	88.33

persons had given them assistance. Among the others mentioned as being of particular aid were neighbors, high school home economics teachers, 4-H leaders and county agents, grandmothers, aunts, sisters, and friends. Only 9 students said they had taken a Singer sewing course. Personal assistance in sewing did not affect the students' performance on the pretest, as indicated by the average total pretest scores of 85.02 for those who had received no help and an average of 85.05 for those who had received assistance.

The students were asked whether they always, usually, or sometimes made their own decision about the clothes they buy. Sixty-six students indicated they always selected their own clothing, 34 replied usually, and only 3 replied sometimes. The average total pretest scores of students in the three groups were 85.09, 85.17, and 82.00, respectively. The scope of the students' decision on the buying of their clothes did not significantly affect their performance on the textiles pretest, as revealed by the Kruskal-Wallis test.

Students were also asked whether they read the fashion magazines such as Vogue, Glamour, and Seventeen regularly, occasionally, or seldom. Forty students indicated they read these fashion magazines regularly, 58 replied occasionally, while only 5 students indicated they seldom read these fashion

magazines. The average total pretest scores for students in the three groups were 84.35, 85.74, and 82.20, respectively. The frequency with which fashion magazines were read by the students had no significant effect upon their total pretest score.

Of the 12 socio-economic factors questioned in this study, only three were found to have a statistically significant effect on the amount of textile knowledge as expressed by the students on the total textiles pretest. To determine which of the eight areas of textile knowledge were more affected by the three significant socio-economic factors, the percentages of average correct responses for each area were computed and compared.

The first of these three significant socio-economic factors was the size of the high school graduating class. Better performance on fabric construction characteristics and differences, on certain finishes applied to fabrics, and on textile labeling information was given by the students from a small high school graduating class of 1 to 49 than by those from a larger high school graduating class (Table 11). The size of the high school graduating class had a slightly reverse effect on the students' knowledge of yarn characteristics. Students' knowledge in the remaining areas covered in the pretest was little affected by this factor as shown by the slight differences in the percentage of correct answers.

The amount of high school clothing instruction was the second influential factor upon the students' knowledge of textiles. Students with 2 semesters or more of high school clothing instruction revealed a greater knowledge on yarn characteristics, on differentiation of textured yarns, fibers, and fabrics, on fabric construction characteristics and differences, and on textile labeling information than students with 1 semester or less

Table 11. Comparison of students' performance on the eight areas of textile knowledge by the size of high school graduating class.

Areas of textile knowledge	Group 1 - High school graduating class of 1 to 49		Group 2 - High School graduating class of 50 or more		Difference in % of correct answers, Group 1 minus Group 2
	Av. score	% of questions correctly answered	Av. score	% of questions correctly answered	
1. Fiber properties	15.00	78.94	14.70	77.36	1.58
2. Fiber sources	9.23	92.30	9.26	92.60	-0.30
3A. Yarn characteristics	2.07	69.00	2.53	84.33	-15.33
B. Differentiation of textured yarns, fibers, and fabrics	6.33	70.33	6.18	68.66	1.67
4. Man-made fiber trade names within generic classifications	2.20	44.00	2.12	42.40	1.60
5. Care of fibers and fabrics	19.17	91.28	18.92	90.09	1.19
6. Fabric construction characteristics and differences	15.05	79.21	13.32	70.10	9.11
7. Labeling information	11.58	89.07	10.98	84.46	4.61
8. Finishes applied to fabrics	6.46	71.71	6.00	66.66	5.11

of high school clothing instruction (Table 12). This socio-economic factor showed little effect on the other areas of textile knowledge questioned.

A third significant factor affecting the students' knowledge of textiles was the amount of their skirts and blouses which they constructed. Fabric construction characteristics and differences was an area of textile knowledge in which students who made more than 25 per cent of their skirts and blouses expressed greater knowledge than those who made less than 25 per cent of their

Table 12. Comparison of students' performance on the eight areas of textile knowledge by their amount of high school clothing instruction.

Areas of textile knowledge	Group 1 - 2 semesters or more of high school clothing: Av. score	Group 1 - 2 semesters or more of high school clothing: % of questions correctly answered	Group 2 - 1 semester or less of high school clothing: Av. score	Group 2 - 1 semester or less of high school clothing: % of questions correctly answered	Differences in % of correct answers, Group 1 minus Group 2
1. Fiber properties	14.89	78.36	14.56	76.63	1.73
2. Fiber sources	9.25	92.50	9.24	92.40	0.10
3A. Yarn characteristics	2.17	72.33	1.80	60.00	12.33
B. Differentiation of textured yarns, fibers, and fabrics	6.42	71.33	5.68	63.11	8.22
4. Man-made fiber trade names within generic classifications	2.16	43.20	2.12	42.40	0.88
5. Care of fibers and fabrics	19.05	90.71	18.92	90.09	0.62
6. Fabric construction characteristics and differences	14.32	75.36	13.64	71.78	3.58
7. Labeling information	11.32	87.07	10.88	83.69	3.38
8. Finishes applied to fabrics	6.19	68.77	6.12	68.00	0.77

skirts and blouses (Table 13). Performance was slightly better on fiber properties also because of this socio-economic factor. The other areas of textile knowledge tested were little affected by this factor.

Table 13. Comparison of students' performance on the eight areas of textile knowledge by the percentage of own skirts and blouses constructed.

Areas of textile knowledge	Group 1 - Constructed more than 25% of own skirts and blouses: Av. score	Group 1: % of questions correctly answered	Group 2 - Constructed less than 25% of own skirts and blouses: Av. score	Group 2: % of questions correctly answered	Difference in % of correct answers, Group 1 minus Group 2
1. Fiber properties	15.01	79.00	14.56	76.63	2.37
2. Fiber sources	9.29	92.90	9.19	91.90	1.00
3A. Yarn characteristics	2.10	70.00	2.06	68.66	1.34
B. Differentiation of textured yarns, fibers and fabrics	6.22	69.11	6.26	69.55	-0.44
4. Man-made fiber trade names within generic classifications	2.10	42.00	2.21	44.20	-1.80
5. Care of fibers and fabrics	19.05	90.71	18.97	90.33	0.38
6. Fabric construction characteristics and differences	14.91	78.47	13.21	69.52	8.95
7. Labeling information	11.21	86.23	11.21	86.23	0.00
8. Finishes applied to fabrics	6.15	68.33	6.19	68.77	0.44

Summary of Findings

The average score of the 103 students whose pretests were analyzed was 85.02 out of 108 possible points, or an average of 78.72 per cent of all questions were answered correctly.

Certain strong and weak areas of textile information as expressed by the students were revealed in a comparison of the average scores on each of the eight areas of textile knowledge. Student performance was best on

fiber sources, care of fibers and fabrics, and information available on labels, with students who received average scores in these areas answering correctly 92.50 per cent, 90.52 per cent, and 86.23 per cent of the questions, respectively. In the area of fiber properties related to serviceability and comfort, student scores averaged 77.94 per cent of the questions, while 74.47 per cent were answered correctly on construction characteristics and differences; 69.33 per cent were answered correctly on yarns and differentiation of yarns, fibers, and fabrics; and 68.55 per cent were answered correctly on finishes applied to fibers and fabrics. Student performance was poorest on the knowledge of tradenames of man-made fibers within certain generic groups, where only 43.00 per cent of the questions were answered correctly.

Students expressed more familiarity with textile knowledge regarding the physical source of fibers than with any of the other seven areas of textile knowledge covered on the pretest. Sources of cotton, wool, mohair, acetate, nylon, Orlon, and rayon were most familiar. Sources of cashmere, silk, and linen, which are fibers less widely used in wardrobes, were missed most frequently.

Considerable knowledge also was expressed by the students concerning the care of fibers and fabrics. Satisfactory care methods were those given by the textile reference books. The most satisfactory laundering temperatures for fabrics of cotton, wool, and nylon were chosen by almost all of the students, while satisfactory washing conditions for rayon fabrics were chosen less frequently. Most students also indicated that dry-cleaning was preferred for wool and silk and was not preferred for cotton and nylon. Fibers which do not melt when pressed at high temperatures were

correctly identified as cotton and linen; however, over one-third of the students incorrectly identified Dacron as a fiber that would not melt. Satisfactory ironing temperatures for garments of cotton or nylon were more familiar than for garments of linen or Dacron.

Familiarity concerning certain information which is available on dress and coat labels or hang-tags was expressed by most students. However, approximately one-fourth of the students were unaware that the generic names of the fibers used were included on the labels of dresses and coats.

In identifying the correct trade name of a man-made fiber with its generic classification, the performance of the students was poorer than on any of the other seven areas of textile knowledge questioned. Dacron was identified as a polyester fiber by only two-thirds of the students. Less than one-half of the students identified Orlon acrylic, Arnel triacetate, and Lurex metallic, while less than one-fourth identified Lycra as a spandex fiber. This poor performance by the students was in direct contrast to their previously mentioned familiarity with other labeling information available to consumers.

Properties of certain fibers were known by most students, with properties of widely used fibers being more familiar than properties of other fibers. The properties of wool fibers were recognized more frequently than those of nylon, while properties of linen were the least familiar of the three. Certain properties of cotton, such as easily wrinkled and resistant to pilling, were identified by most students, while a cotton fabric without a wash-and-wear finish was not recognized by almost one-half of the students as being more absorbent to moisture than a fabric with the finish. Moisture absorbency was a fiber property recognized by 87 per cent

of the students as affecting the coolness and comfort on a garment. When asked to select either cotton, nylon, Dacron, or wool as a fiber which would give these properties on a hot, damp day, cotton was selected by only 53 per cent of the students.

Misconceptions concerning the properties of Dacron were revealed. Forty-three per cent of the students mistakenly identified Dacron as being cool and comfortable to wear on a hot, damp day, while 37 per cent incorrectly stated that Dacron would not melt when pressed at a high temperature. However, a Dacron and cotton blend was selected by 95 per cent of the students as a fabric having easy-care properties. Students seemed to be more familiar with Dacron when used in a blend, and they may have been confusing the properties of two fibers as being characteristic of 100 per cent Dacron.

Students expressed less knowledge about characteristics and differences in fabric construction than about fiber sources, methods of caring for fibers and fabrics, labeling information, or fiber properties. Characteristics of fabrics constructed by the knitting process were more familiar than characteristics of fabrics constructed by felting. Descriptions of the four main weaves were correctly identified by most of the students, although twill and pile weaves were less familiar than plain and satin weaves. Misconceptions in identifying the weave of seven common fabrics were revealed. Sateen, terry cloth, and cotton broadcloth were the fabrics whose weaves were most familiar. Denim and gabardine were mistakenly identified as plain weaves rather than twill weaves. Corduroy, a pile weave, was incorrectly selected as a twill weave, and velveteen was identified as plain, twill, and satin weaves rather than as a pile weave. When asked to identify four fabrics whose designs were achieved during construction of the fabrics, students

revealed that this knowledge was not widely held, as correct responses of brocade, gingham, shantung, and marquisette were given by only 57 to 87 per cent of the students.

Many misconceptions in differentiating textured yarns, fibers, and fabrics were revealed by the students. Ban-lon and Helenca were recognized as textured yarns by three-fourths and one-half of the students, respectively. Both of these textured yarns were often mistakenly identified as fibers. Dacron, nylon and Orlon fibers were confused as being fabrics by approximately one-fourth of the students. Orlon also was identified as a textured yarn by approximately one-fourth of the students. Jersey, pique, organdy, and gingham fabrics were mistaken for textured yarns by approximately one-fourth of the students. Several students also mistook these fabrics for fibers. Familiarity with metallic yarn and textured yarn characteristics was expressed by only 50 to 75 per cent of the students.

Limited knowledge concerning the definition and characteristics of certain finishes applied to fibers and fabrics was expressed by the students, as they answered on the average only two-thirds of the questions correctly. Students expressed knowing the definition of certain terms referring to finishes, as 102 of the 103 students correctly defined crease-resistant. Characteristics which certain finishes gave to fibers and fabrics were less familiar than definitions of terms referring to finishes. Approximately 90 per cent of the students expressed familiarity with Tebilized, Wrinkleshed, and Everglaze as trade names of crease-resistant finishes, while approximately 75 per cent indicated a Sanitized finish made a fabric resistant to damage from perspiration and bacteria. Slightly over 50 per cent expressed knowing that cotton with a wash-and-wear finish was more sensitive to heat

than cotton without such a finish, that mercerized cotton thread was more lustrous than unmercerized thread, and that cotton fabrics were more colorfast to washing and light when vat-dyed. Sanforized was identified as an anti-shrinkage finish by all but 2 students, although only 72 students correctly stated that the fabric would not shrink more than 1 per cent. And less than one-third of the students recognized the anti-shrinkage finishes of Lanaset and Sanforlan as being applied to fabrics of wool.

Statistical analysis of socio-economic factors and textile knowledge showed that the size of the high school graduating class, the amount of high school clothing instruction, and the percentage of personal skirts and blouses constructed were significantly related to the students' performance on the total textiles pretest, when analyzed by the Kruskal-Wallis one-way analysis of variance by rank test (significance level at .05).

Students from a small high school with a graduating class of 1 to 49 expressed a significantly greater knowledge of textiles than those in a graduating class of 50 or more. When the percentages of average correct responses on each of the eight areas of textile knowledge were compared, performance was better on questions concerning fabric construction characteristics and differences, finishes applied to fabrics, and textile labeling information by the students from the smaller high schools than by those from larger high schools.

Students with two semesters or more of clothing instruction in high school expressed a greater knowledge of textiles than students with one semester or less of high school clothing instruction. Areas of textile knowledge in which their performance was particularly better, as shown in a comparison of percentages of correct answers, were yarn characteristics

and differentiation of textured yarns, fibers, and fabrics; fabric construction characteristics and differences; and textile labeling information.

When students constructed more than 25 per cent of their skirts and blouses, they performed significantly better on the textiles pretest than did those who made less than 25 per cent of their skirts and blouses. Students in the first group expressed greater knowledge on fabric construction characteristics and differences than those in the latter group.

No significant relationship was found in the students' performance on the textiles pretest and the following socio-economic factors: parents' occupations and educational levels, number of children in the family, number of children in the family still considered dependent upon the parents, location of the home community, number of years of 4-H clothing projects completed, additional instruction in sewing, scope of personal decisions made when buying own clothes, and frequency of reading fashion magazines.

The relationship between students' knowledge of textiles and the amount of their high school home economics clothing courses was found to agree with a similar relationship reported by West (29) that the amount of high school home economics courses influenced the achievement in a college clothing construction course. Findings by Wright and Henkel (32) that performance in college clothing construction course was influenced more by the amount rather than the type of previous clothing construction experiences were also partially supported by this study. Both the amount of high school clothing instruction and the amount of personal sewing were found in this study to be significantly related to students' performance on the textiles pretest, while neither 4-H instruction and other sewing assistance nor the amount of this instruction was related.

CONCLUSIONS AND RECOMMENDATIONS

On the average, students answered over three-fourths or 78.72 per cent of all the textile questions given. Since the average pretest score was 85.02 out of 108 possible points, students did indicate that they possessed certain knowledge of textiles.

The students expressed more knowledge in certain areas of textiles than in other of these areas. When the average scores for each area were compared by using the percentage of correct answers, the eight areas of textile knowledge questioned in the pretest were ranked from highest to lowest in this order:

(1) The physical source of certain fibers.

(2) Methods of caring for certain fibers and fabrics.

(3) Textile information on labels available to the consumer.

(4) The outstanding properties of selected fibers with regard to serviceability and comfort.

(5) The characteristics and differences in construction of fabrics.

(6) Certain characteristics of significant yarns; and differentiation of textured yarns, fibers, and fabrics.

(7) The definition and characteristics of certain finishes applied to fibers and fabrics.

(8) Selected trade names of man-made fibers within certain generic groups.

As the order in which the areas of textile knowledge as ranked by the students' performance was considered, it seemed that as the area of textile knowledge became more specific and technical and less likely to be related to the students' actual consumer experiences the performance on that area

of the pretest lowered.

One of the reasons for the scores on the pretest being higher than was expected is believed to be the consumer-oriented manner in which the test questions were constructed. It seems likely that when textile information is connected with the consumers' actual experiences with clothing and fabrics, it is more easily grasped than when such textile facts are isolated. Therefore, it is recommended that the textile information presented in a beginning college textiles course continue to be approached from a consumer's viewpoint.

The relative degree of emphasis which a textiles instructor places upon any areas to be covered in the textiles course should be left to her own discretion after a pretest is given and analyzed. This study does not offer sufficient evidence to authoritatively state that a certain area of textiles should assume a certain percentage of the course emphasis. However, it is believed that this study does point up certain weaknesses in the students' information of textiles. It is recommended that a textiles instructor give careful consideration when planning a beginning textiles course to the strengthening of these weak areas of textile knowledge as indicated by this study.

When the eight areas of textile knowledge were ranked by the students' average performance, the weak areas of textile knowledge were revealed in the lower positions. More instruction regarding the generic classification of the man-made fibers is needed, as well as the weaves of certain common fabrics. Because of the students' confusion in identifying fabrics, fibers, and textured yarns, it seems evident that instruction needs to clarify this differentiation. Students should understand that the characteristics of a

certain piece of cloth are affected by many variables: the fiber which is used, the type of yarn which is used, the manner in which the fabric is constructed or woven, and the finishes which are applied.

College textiles instructors could expect that an investigation of certain socio-economic factors would give an indication of the amount of textile knowledge possessed by students. The size of the high school graduating class, the amount of high school clothing instruction, and the amount of personal sewing done by the student were socio-economic factors found to be significantly related to the students' knowledge of textiles, as shown by the Kruskal-Wallis test. Therefore, administration of a questionnaire including these three significant socio-economic factors would indicate the students which have a better basis of textile knowledge.

The strengthening of certain areas of textile knowledge in the pretest is recommended. Because of the variation between the students' good performance concerning information available on labels and their poor performance concerning identification of man-made fiber trade names within the generic classifications (which is also available on garment labels), it is recommended that further questions be added to these sections to test students' knowledge more completely. It is also suggested that more questions be added regarding the characteristics of certain yarns, in order to cover this area more thoroughly. If that were done, the questions on differentiation of textured yarns, fibers, and fabrics could be expanded as a ninth and separate area of textile knowledge.

It is recommended that certain of the pretest questions be reworded. The following revisions are suggested to insure that the questions are stated as clearly as possible and that the students will better understand

what is being asked:

(1) Change question 37-38 to read: "It is wise to read the label or hang-tag when purchasing a garment. For each statement indicate the information which is usually found on the label by an (X) and the information which is not usually found on the label by an (O)." Omit item 38C, "the manufacturer of the woven cloth," and make a substitution, such as "the special finishes given to the fabric."

(2) Change question 87 to read: "Using two different kinds of yarns in the warp and the filling."

In order to keep up-to-date the textile knowledge which is covered in the pretest, it is recommended that further revisions and additions or deletions be made in the test questions as needed.

It is recommended that a study be done to obtain students' misconceptions concerning textile knowledge by asking them open-end questions. These misconceptions then could be incorporated into the textiles pretest in order to provide better understanding of poor choices of textiles for specific end purposes.

A study involving the administration of this textiles pretest over a period of several years is suggested in order to determine if there is any change in the amount of textile knowledge possessed by students or if there is any change in their strong and weak areas of textile knowledge.

One of the variables not included in this study was the influence of consumer experiences upon textile knowledge. It is recommended that a study be devoted to investigating the amount and kind of consumer experiences

in clothing which certain consumers have had, and the possible effect of these experiences upon the consumers' knowledge of textiles.

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APPENDIX A

QUESTIONNAIRE

This questionnaire is designed to find certain information which might have an influence on your knowledge of textiles. Please answer each question. Names will not be used and all information will be confidential. However, your name is requested since it may be needed to obtain more information about you; in the research report your identity will be indicated only by a number.

Name _____

Have you taken any textiles courses in college? Yes____ No____

Concerning your family:

1. What is your father's occupation? (Check if retired____or deceased ____, and state what his occupation was.)

   _____

2. What is your mother's occupation? (Check if retired____or deceased ____.)

   _____

3. What was the last year of schooling completed by your father?

   ____Grade school, 8th or below
   ____9th grade, high school
   ____10th grade, high school
   ____11th grade, high school
   ____12th grade, high school
   ____Freshman, college
   ____Sophomore, college
   ____Junior, college
   ____Senior, college
   ____Other (specify)_____

4. What was the last year of schooling completed by your mother?

   ____Grade school, 8th or below
   ____9th grade, high school
   ____10th grade, high school
   ____11th grade, high school
   ____12th grade, high school
   ____Freshman, college
   ____Sophomore, college
   ____Junior, college
   ____Senior, college
   ____Other (specify)_____

5. How many children are in your family, including yourself?_____

6. How many of these children are still dependents of your parents?

   _____

Concerning yourself:

1. Indicate the location of your home.

   ____Farm
   ____Rural non-farm
   ____Town
   ____City, over 2,500
   ____City, over 25,000 (including suburbs)

2. Indicate the approximate size of your high school graduating class.

   ____1-49
   ____50-99
   ____100-500
   ____over 501

3. Indicate the total number and length of clothing class units which you had in junior high and senior high school.

   Junior high (7th to 9th grades)--
   Total number of units_____
   Length of time spent____Less than 4 weeks
   ____Between 4 and 8 weeks
   ____Between 8 and 12 weeks
   ____More than 12 weeks
   ____A full semester

   Senior high (10th to 12th grades)--
   Total number of units_____
   Length of time spent____Less than 4 weeks
   in each unit:____Between 4 and 8 weeks
   ____Between 8 and 12 weeks
   ____More than 12 weeks
   ____A full semester

4. If you have been a 4-H member, how many years of 4-H clothing projects did you complete._____

5. Have you had any other supervised clothing instruction, and if so, what? (Example: Singer sewing course, etc.)

   _____

6. Has any individual given you valuable help in sewing? Yes____ No____.
   If so, who?____Mother
   ____Neighbor
   ____Other (specify)_____

7. Approximately how many of your own skirts and blouses do you make?

____none
____up to 25%
____up to 50%
____up to 75%
____up to 100%

8. Do you make your own final decision about the clothes you buy?

____Always
____Usually
____Sometimes
____Seldom

9. Do you read any fashion magazines, such as Vogue, Glamour, and Seventeen?

____Regularly
____Occasionally
____Seldom

TEXTILES PRETEST

Directions: Carefully read each question and indicate on the answer sheet the answer which you believe is correct. Please do not write on this test booklet.

You may guess if you are not certain of the answer, but it is best to avoid wild guessing.

PART I: On the answer sheet, place the letter of the phrase (A, B, C, or D) which best completes each statement. There is only one answer for each question.

1. Static electricity may accumulate most readily in a slip made of:

   A. Cotton
   B. Silk
   C. Nylon

2. Tebilized, Wrinkle-shed, and Everglaze are trade-mark names of:

   A. Water-repellent finishes
   B. Crease-resistant finishes
   C. Antiseptic finishes
   D. Flame-resistant finishes

3. A ready-made cotton garment is labeled "Sanforized", which indicates the fabric:

   A. Is colorfast and will not fade.
   B. Has been preshrunk and no further shrinkage will occur.
   C. Has a wash-and-wear finish.
   D. Will not shrink more than one per cent.

4. A sweater is labeled Ban-lon. This is a trade name of:

   A. A fullfashioning process for knitting.
   B. A moth resistant finish.
   C. A garment of textured yarn.
   D. A lamb's wool fiber.

5. The term "virgin wool" appears on the lebel of a sweater and indicates wool fibers which:

   A. Have not been used previously in a garment.
   B. Have been reclaimed and reworked from other woolen products.
   C. Are used to make only clothing apparel.
   D. Have been given a special finish to insure cleanliness.

6. When selecting a wool skirt, the fabric which would be rated lowest in strength is constructed by:

   A. Weaving
   B. Felting
   C. Knitting

7. When pressing woolen garments, it is desirable to use a press cloth because it:

   A. Prevents the fabric from becoming shiny.
   B. Keeps the fabric from shrinking.
   C. Keeps the iron from sticking to the surface of the fabric.
   D. Presents the fabric from wrinkling.

8-10. In selecting dresses for traveling, it is wise to choose fibers and fabrics which will give satisfactory service. Wrinkle-resistance and "easy-care" properties are usually desired.

8. In choosing a fabric, the method of construction which should have the greatest resistance to wrinkling is:

   A. Felting
   B. Weaving
   C. Knitting

9. A fiber that is naturally resistant to wrinkling is:

   A. Cotton
   B. Dacron
   C. Linen
   D. Rayon

10. A fiber blend that is widely used for blouses and shirtwaist dresses and is suitable for traveling because of its "easy-care" properties is:

   A. Rayon and cotton
   B. Silk and rayon
   C. Rayon and acetate
   D. Dacron and cotton

11. The "finishes" of fabrics refer to:

   A. The appearance of fabrics resulting from the method of weaving.
   B. The temporary or permanent treatments which have been applied to enable fabrics to perform a certain function more effectively.
   C. The feel of fabrics due to the kind of fibers used.
   D. The appearance of fabrics due to the method of dyeing or printing.

12. The term "wrinkle- or crease-resistant" indicates the property of a fiber or fabric:

A. To retain pleats or creases due to a resin treatment.
B. To resist and recover from wrinkles which normally occur during its use.
C. To withstand hard wear.
D. To resist shrinkage when laundered.

13. A cotton blouse which does not have a wash-and-wear finish:

A. Is sensitive to low pressing temperatures.
B. Pills easily.
C. Accumulates static electricity.
D. Absorbs moisture.

14. In comparison to the above question, a cotton fabric with a wash-and-wear finish usually is:

A. More sensitive to heat.
B. More likely to pill.
C. More likely to accumulate static electricity.
D. More absorbent.

15. The term "pilling" refers to:

A. The raising of the soft surface on pile or napped fabrics.
B. The printing of a design on a fabric by applying one layer of color over another.
C. The matting together or felting of wool fibers due to wear.
D. The forming of balls on the surface of a fabric from abrasion and the working loose of fiber ends.

16. A cotton fabric which is colorfast to washing and light would be indicated by the term:

A. Pre-shrunk
B. Vat-dyed
C. Mercerized
D. Wash-and-wear

17. A treatment designed to make a fabric resistant to damage from perspiration and bacteria would be indicated by the trade name:

A. Mitin
B. Ban-Care
C. Sanitized
D. Milium

18. Sanforlan and Lanaset are trade names of finishes to control shrinkage which are applied to fabrics of:

A. Cotton
B. Wool
C. Linen
D. Nylon

19. A spool of mercerized cotton sewing thread, in comparison to unmercerized cotton thread, would be:

A. More lustrous
B. Weaker
C. Stiffer
D. More sensitive to heat

20. A fiber property which affects the coolness and comfort of a garment for summer wear is:

A. Accumulation of static electricity
B. Moisture absorbency
C. Resistance to wrinkling
D. Fiber strength

21. The most satisfactory fiber for a summer dress that is cool and comfortable on a hot, damp day is: (Consider that the same size yarns and weave are used.)

A. All nylon
B. All cotton
C. All Wool
D. All Dacron

22. The usual cause of an iron sticking to or making ripples on an acetate blouse is:

A. The temperature of the iron is too high.
B. A steam iron is being used.
C. The temperature of the iron is too low.
D. A press cloth is not being used.

23. In laundering rayon garments, care must be used since:

A. Rayon is weaker when wet than when dry.
B. Rayon is sensitive to low washing temperatures.
C. Rayon pills with agitation.
D. Rayon is not colorfast and fades easily.

24. A cotton blouse is labeled "easy-care". The method of laundering which would require the least touch-up pressing is:

A. Machine wash, rinse, spin damp-dry, and tumble thoroughly dry.
B. Machine wash, rinse, spin damp-dry, and hang to dry.
C. Hand wash, rinse, hang while dripping wet to dry, avoiding wringing and twisting.
D. Hand wash, rinse, wring damp-dry, and hang to dry.

25. Anklets of textured nylon yarn:

A. Are non-absorbent to perspiration.
B. Are heavy and uncomfortable.
C. Are weak when wet.
D. Stretch to fit several sizes.

26. Metallic yarns may be used in a skirt fabric for decoration. When covered by a plastic film, such metallic yarns are:

A. Dull in color.
B. Stiff because of their thickness.
C. Resistant to tarnishing.
D. Limited in their range of colors.

27. The method of construction which would result in a fabric that is pliable, elastic, and adaptable to form-fitting garments is:

A. Weaving
B. Felting
C. Knitting

28. The weave that would produce the most closely woven, heaviest, and sturdiest fabric when using yarns of the same size and quality is:

A. Twill weave
B. Plain weave
C. Satin weave

PART II: Read the directions given with each of the following questions.

29-33. The trade name of each man-made fiber may be listed under its family group or generic classification. For each of the following generic terms, choose one of the three trade names which correctly belongs in that classification.

Generic term	Trade names
29. Spandex.....	A. Lastex B. Lycra C. Orlon
30. Polyester.....	A. Arnel B. Dacron C. Nylon
31. Triacetate.....	A. Acrilan B. Arnel C. Orlon
32. Acrylic.....	A. Dacron B. Lycra C. Orlon
33. Metallic.....	A. Acrilan B. Dynel C. Lurex

34-36. When selecting clothes for a wardrobe, it is important to consider the distinctive properties of different fibers. Answer each statement below by placing an (X) if the statement is true or an (O) if it is not true. None of the fabrics used in the garments have any special finishes.

34. A skirt of wool:	A. Is moth resistant. B. Is warm to wear. C. Is elastic, resilient and tends to resist wrinkles. D. Absorbs moisture.
35. A blouse of nylon:	A. Is moth resistant. B. Is free from static electricity. C. Tends to grey or pick up other colors in laundering. D. Retains heat-set pleats or tucks.

36. A dress of linen:

A. Is resistant to wrinkling.
B. Absorbs moisture readily.
C. Is strong and durable.
D. Does not lint on a black coat.

37-38. It is wise to read the label or hang-tag when purchasing a garment. For each statement indicate the information which is found on the label by an (X) and the information which is not found on the label by an (O).

37. Information found on a dress label or hang-tag:

A. The generic names of the fibers used.
B. The weave of the fabric.
C. The percentage of each fiber used.
D. The special finishes given to the fabric.
E. The fiber content of the interfacing.
F. The garment manufacturer or brand.

38. Information found on a coat label or hang-tag:

A. The generic names of the fibers used.
B. The percentage of each fiber used.
C. The manufacturer of the woven cloth.
D. The garment manufacturer or brand.
E. The fiber content of the lining.
F. The length of wear expected from the coat.

39-42. Match each of the following weaves with its description at the left.

39. Produces a smooth, lustrous fabric because the surface consists almost entirely of floating warp or filling threads.

40. Produces diagonal lines or ridges in the cloth formed by the woven yarns.

41. Produces raised loops or threads which project from the surface of the fabric.

42. Produces the simplest form of interlacing, with every thread alternately passing over and under the threads of the other direction.

A. Pile weave
B. Plain weave
C. Twill weave
D. Satin weave

43-49. At the left are listed several fabrics commonly found in a wardrobe. Choose from the column at the right the weave of each fabric. Each weave may be used more than once.

43. Corduroy
44. Cotton broadcloth
45. Denim
46. Gabardine
47. Sateen
48. Terry cloth
49. Velveteen

A. Plain weave
B. Twill weave
C. Satin weave
D. Pile weave

50-58. The items listed at the left are fibers, textured yarns, or fabrics. For each item, choose its correct classification. The classifications may be used more than once.

50. Ban-lon
51. Dacron
52. Gingham
53. Helenca
54. Jersey
55. Nylon
56. Organdy
57. Orlon
58. Pique

A. A fiber
B. A textured yarn
C. A fabric

59-62. All fibers do not require the same washing temperatures. Select the most satisfactory washing temperature in the right column for each of the following garments at the left. The temperatures may be used more than once.

59. White cotton blouse
60. Nylon hose
61. Rayon dress
62. Wool sweater

A. Hot water
B. Lukewarm water

63-66. Different fibers require different pressing temperatures. Match the most satisfactory temperature setting on the iron with each garment at the left.

63. Cotton skirt
64. Dacron dress
65. Linen skirt
66. Nylon blouse

A. Low temperature
B. Medium to high temperature

67-70. Certain fibers may be cared for most satisfactorily by dry-cleaning. For each fiber in the following list, indicate whether dry-cleaning is or is not preferred. Consider that none of the fibers have been given special finishes.

67. Cotton
68. Nylon
69. Silk
70. Wool

A. Dry-cleaning is preferred
B. Dry-cleaning is not preferred

71-75. Certain fibers melt when pressed at high temperatures, while other fibers do not. Match the property at right with each fiber at left.

71. Acetate
72. Cotton
73. Dacron
74. Linen
75. Nylon

A. Melts when pressed at a high temperature
B. Does not melt when pressed at a high temperature

76-85. Classify each fiber listed at the left as plant, animal, or man-made fibers. Each classification may be used more than once.

76. Acetate
77. Cashmere
78. Cotton
79. Linen
80. Mohair
81. Nylon
82. Orlon
83. Rayon
84. Silk
85. Wool

A. Plant
B. Animal
C. Man-made

86-89. Fabric designs may be achieved during the construction of the fabric. For each of the following methods, select the fabric whose design was obtained by:

86. Using different colored yarns——— A. Corduroy
B. Faille
C. Gingham

87. Using different types of yarn——— A. Cotton broadcloth
B. Flannel
C. Shantung

88. Spacing of yarns——————————— A. Chiffon
B. Flannel
C. Marquisette

89. Varying the interlacement of yarns— A. Brocade
B. Cotton broadcloth
C. Gingham

Name: _____ ANSWER SHEET

Please place all your answers on this sheet.

PART I:

1. C
2. B
3. D
4. C
5. A
6. B
7. A
8. C
9. B
10. D

11. B
12. B
13. D
14. A
15. D
16. B
17. C
18. B
19. A
20. B
21. B
22. A
23. A
24. C
25. D
26. C
27. C
28. A

PART II:

29. B
30. B
31. B
32. C
33. C

34 A. O
B. X
C. X
D. X

35 A. X
B. O
C. X
D. X

36 A. O
B. X
C. X
D. X

37 A. X
B. O
C. X
D. X
E. O
F. X

38 A. X
B. X
C. O
D. X
E. X
F. O

39. D
40. C
41. A
42. B
43. D
44. A
45. B
46. B
47. C
48. D
49. D
50. B
51. A
52. C
53. B
54. C
55. A
56. C
57. A
58. C
59. A
60. B
61. B
62. B
63. B
64. A
65. B
66. A
67. B
68. B
69. A
70. A
71. A
72. B
73. A
74. B
75. A
76. C
77. B
78. A
79. A
80. B
81. C
82. C
83. C
84. B
85. B
86. C
87. C
88. C
89. A

APPENDIX B

Number of Responses for Each Pretest Item

Question No.	Possible responses	No. of responses	Question No.	Possible responses	No. of responses
1. Fiber properties:					
			34	A X	12
1	A	1		O*	91
	B	10			
	C*	92		B X*	103
				O	0
9	A	0			
	B*	73		C X*	77
	C	8		O	26
	D	22			
				D X*	69
10	A	2		O	34
	B	1			
	C	2	35	A X*	67
	D*	98		O	36
13	A	21		B X	11
	B	19		O*	92
	C	1			
	D*	59		C X*	89
	-	3		O	14
15	A	7		D X*	68
	B	1		O	35
	C	8			
	D*	85	36	A X	33
	-	2		O*	70
20	A	1		B X*	66
	B*	90		O	37
	C	6			
	D	6		C X*	88
				O	15
21	A	1			
	B*	55		D X*	87
	C	3		O	16
	D	44			
			2. Fiber sources		
			76	A	2
				B	1
				C*	99
				-	1

*Designates correct response.
-Indicates that no response was given.

Question No.	Possible responses	No. of responses
77	A	1
	B*	87
	C	14
	-	1
78	A*	100
	B	2
	C	0
	-	1
79	A*	91
	B	1
	C	10
	-	1
80	A	2
	B*	97
	C	4
81	A	3
	B	0
	C*	99
	-	1
82	A	1
	B	5
	C*	96
	-	1
83	A	7
	B	0
	C*	95
	-	1
84	A	13
	B*	89
	C	1
85	A	2
	B*	99
	C	2
3-A.	Characteristics of yarns:	
4	A	33
	B	1
	C*	59
	D	9
	-	1
25	A	18
	B	0
	C	5
	D*	78
	-	2
26	A	5
	B	19
	C*	77
	D	1
	-	1
3-B.	Differentiation of textured yarns, fibers, and fabrics:	
50	A	16
	B*	77
	C	9
	-	1
51	A*	63
	B	5
	C	35
	-	1
52	A	0
	B	6
	C*	97
53	A	37
	B*	49
	C	12
	-	5
54	A	9
	B	35
	C*	59
55	A*	74
	B	5
	C	24
56	A	5
	B	10
	C*	88

Question No.	Possible responses	No. of responses
3-B. Differentiation of textured yarns, fibers, and fabrics (cont.):		
57	A*	59
	B	34
	C	10
58	A	9
	B	16
	C*	78
4. Tradenames of man-made fibers:		
29	A	61
	B*	21
	C	16
	-	5
30	A	15
	B*	66
	C	21
	-	1
31	A	45
	B*	43
	C	13
	-	2
32	A	27
	B	22
	C*	50
	-	4
33	A	17
	B	42
	C*	41
	-	3
5. Care of fibers and fabrics:		
7	A*	82
	B	7
	C	14
	D	0
22	A*	100
	B	1
	C	1
	D	1
23	A*	59
	B	12
	C	23
	D	6
	-	3
24	A	10
	B	17
	C*	73
	D	3
59	A*	100
	B	3
60	A	0
	B*	103
61	A	9
	B*	93
	-	1
62	A	1
	B*	102
63	A	0
	B*	103
64	A*	90
	B	13
65	A	12
	B*	91
66	A*	102
	B	1
67	A	0
	B*	103
68	A	6
	B*	97

Question No.	Possible responses	No. of responses
5. Care of fibers and fabrics (cont.):		
69	A*	93
	B	10
70	A*	103
	B	0
71	A*	98
	B	5
72	A	0
	B*	103
73	A*	66
	B	37
74	A	3
	B*	100
75	A*	98
	B	5
6. Construction of fabrics:		
6	A	7
	B*	54
	C	42
8	A	9
	B	14
	C*	80
27	A	7
	B	6
	C*	90
28	A*	57
	B	14
	C	31
	-	1
39	A	3
	B	2
	C	4
	D*	94
40	A	13
	B	2
	C*	84
	D	4
41	A*	85
	B	3
	C	14
	D	1
42	A	1
	B*	97
	C	1
	D	3
	-	1
43	A	4
	B	30
	C	1
	D*	68
44	A*	88
	B	13
	C	1
	D	1
45	A	45
	B*	52
	C	2
	D	4
46	A	39
	B*	41
	C	16
	D	6
	-	1
47	A	2
	B	2
	C*	92
	D	7
48	A	5
	B	9
	C	0
	D*	89

Question No.	Possible responses	No. of responses
6. Construction of fabrics: (cont.):		
49	A	7
	B	9
	C	13
	D*	74
86	A	3
	B	13
	C*	86
	-	1
87	A	5
	B	18
	C*	79
	-	1
88	A	39
	B	4
	C*	59
	-	1
89	A*	90
	B	6
	C	6
	-	1
7. Labeling information:		
5	A*	88
	B	4
	C	3
	D	8
37 A	X*	77
	O	26
B	X	16
	O*	87
C	X*	99
	O	4
D	X*	91
	O	12
E	X	10
	O*	93
F	X*	103
	O	0
38 A	X*	83
	O	20
B	X*	97
	O	6
C	X	42
	O*	61
D	X*	102
	O	1
E	X*	72
	O	31
F	X	1
	O*	102
8. Finishes:		
2	A	3
	B*	92
	C	6
	D	2
3	A	0
	B	29
	C	2
	D*	72
11	A	4
	B*	89
	C	2
	D	8
12	A	1
	B*	102
	C	0
	D	0

Question No.	Possible responses	No. of responses	Question No.	Possible responses	No. of responses
14	A*	68			
	B	6			
	C	10			
	D	17			
	-	2			
16	A	0			
	B*	54			
	C	40			
	D	8			
	-	1			
17	A	10			
	B	10			
	C*	73			
	D	8			
	-	2			
18	A	18			
	B*	31			
	C	27			
	D	21			
	-	6			
19	A*	57			
	B	9			
	C	33			
	D	4			

APPENDIX C

Statistical Analysis of Data

In each case the null hypothesis tested was that there was no difference in the probability distributions of the students' total pretest scores for the various groups, against the alternative that there was a difference.

The statistical test used was the Kruskal-Wallis one-way analysis of variance by ranks (Siegel,22); that is

$$H = \frac{12}{N(N+1)} \sum_{j=1}^{k} \frac{R_j^2}{n_j} - 3(N+1)$$

which is distributed approximately as chi-square with k-1 d.f. The significance level α, or the probability of mistakenly rejecting the null hypothesis, was set at .05.

Statistical analysis of data by grouping of factor tested

Grouping of factor tested	Test statistic H value	Degrees of freedom	Probability value	Concl.
I. Occupation of father				
1. professional; semi-professional; managerial; clerical; sales; agriculture; skilled; semi-skilled; unskilled	H = 12.19	df=8	$p \leq .20$	Accept H_0
2. professional, semi-professional, and managerial; clerical and sales; agriculture; skilled, semi-skilled, and unskilled	H = 2.35	df=3	$p \leq .70$	Accept H_0

Grouping of factor tested	Test statistic H value	Degrees of freedom	Probability value	Concl.
II. Occupation of mother				
1. full-time homemaker; profession; clerical; sales; service	H = 0.93	df=4	$p \leq .99$	Accept H_o
2. full-time homemaker; employed outside of home	H = 0.86	df=1	$p \leq .50$	Accept H_o
III. Father's schooling				
1. 3 years or less of high school; high school graduation; 1 to 3 years of college or trade school; college graduation or advanced schooling	H = 3.05	df=3	$p \leq .50$	Accept H_o
2. high school graduation or below; advanced schooling beyond high school graduation	H = 2.46	df=1	$p \leq .20$	Accept H_o
IV. Mother's schooling				
1. 3 years or less of high school; high school graduation; 1 to 3 years of college or business school; college graduation or advanced schooling	H = 3.61	df=3	$p \leq .50$	Accept H_o
2. high school graduation or below; advanced schooling beyond high school graduation	H = 2.57	df=1	$p \leq .20$	Accept H_o
V. Number of children in family				
1. one; two; three; four; five; six or more	H = 7.70	df=5	$p \leq .30$	Accept H_o
2. one; two to four; five or more	H = 5.01	df=2	$p \leq .10$	Accept H_o
3. one to four; five or more	H = 3.62	df=1	$p \leq .10$	Accept H_o
VI. Number of dependent children in family				
1. none; one; two; three; four; five or more	H = 3.63	df=5	$p \leq .70$	Accept H_o
2. none to two; three or more	H = 0.42	df=1	$p \leq .90$	Accept H_o

Grouping of factor tested	Test statistic H value	Degrees of freedom	Probability value	Concl.
VII. Location of home				
1. farm or rural; town; city over 2,500; large city over 25,000	H = 0.51	df=3	$p \leq .99$	Accept H_o
VIII. Size of high school graduating class				
1. 1 to 49; 50 to 99; 100 to 500; over 501	H = 4.92	df=3	$p \leq .20$	Accept H_o
2. 1 to 99; over 100	H = 0.55	df=1	$p \leq .50$	Accept H_o
3. 1 to 49; over 50	H = 3.97	df=1	$p \leq .05$	Reject H_o
IX. Amount of high school clothing classes				
1. none; less than 1 semester; 1 semester; 2 semesters; 3 or more semesters	H = 7.73	df=4	$p \leq .20$	Accept H_o
2. 1 semester or less; 2 semesters or more	H = 3.94	df=1	$p \leq .05$	Reject H_o
X. Number of years of 4-H clothing projects				
1. none, 1 to 2 years, 3 to 4 years; 5 to 6 years, 7 to 8 years, 9 or more years	H = 1.93	df=5	$p \leq .90$	Accept H_o
XI. Amount of own skirts and blouses constructed.				
1. none; up to 25%; up to 50%; up to 75%; up to 100%	H = 5.00	df=4	$p \leq .30$	Accept H_o
2. Less than 25%; more than 25%	H = 4.10	df=1	$p \leq .05$	Reject H_o
3. None; up to 25% or more	H = 1.30	df=1	$p \leq .30$	Accept H_o
XII. Assistance in sewing.				
1. no help; some other help	H = 0.00	df=1	$p \leq .99$	Accept H_o
XIII. Decides on buying own clothes.				
1. always; usually; sometimes	H = 0.01	df=1	$p \leq .95$	Accept H_o
XIV. Reads fashion magazines				
1. Regularly; occasionally; seldom	H = 0.98	df=1	$p \leq .50$	Accept H_o

DEVELOPMENT OF A TEXTILES PRETEST FOR COLLEGE STUDENTS

by

LOERNA CHARLENE KOCH

B.A., Friends University, 1961

AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Clothing and Textiles

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1963

The purposes of this study were to develop a pretest to measure the extent of the knowledge of textiles possessed by college students before instruction in a college textiles course, to analyze the data after administering the pretest to aid textile instructors in planning a beginning textiles course, to determine if selected socio-economic factors in the students' background have an effect on their textile knowledge, and to make recommendations for future use of the pretest.

The previous supervised learning experiences available, the source material, and objectives pertaining to textiles for the junior and senior high school clothing classes and for the 4-H clothing projects in Kansas were reviewed. From these sources, supplemented by textile information widely available, a list of eight areas of textile information believed to be of significance was compiled for use as a guide in writing the pretest questions. A diagnostic achievement text was then carefully constructed, using multiple choice, matching, and true-false questions. A questionnaire was developed to secure information regarding selected socio-economic factors. After preliminary administration and revision the pretest, an answer sheet, and the questionnaire were administered to 104 students in the selection of clothing course at Kansas State University in the spring of 1962.

The total pretest scores of 103 students and their scores on the eight areas of textile knowledge were analyzed by summations, averages, and percentages. Questionnaire answers were grouped and also analyzed by the descriptive method. The Kruskal-Wallis one-way analysis of variance by ranks test was used to determine significant relationships at the .05 level between the socio-economic factors and the students' total pretest scores.

Scores ranged from 101 to 64 and the average was 85.02 of 108 possible points. When the average area scores were compared by using the percentage of correct answers, the eight areas of textile knowledge questioned in the pretest were ranked from highest to lowest in this order:

(1) Physical source of certain fibers.

(2) Methods of caring for certain fibers and fabrics.

(3) Textile information on labels available to the consumer.

(4) Properties of selected fibers with regard to serviceability and comfort.

(5) Characteristics of and differences in construction of fabrics.

(6) Characteristics of certain yarns; and differentiation of textured yarns, fibers, and fabrics.

(7) Definitions and characteristics of certain finishes applied to fibers and fabrics.

(8) Selected trade names of man-made fibers within certain generic groups.

Statistical analysis by the Kruskal-Wallis test of the socio-economic factors and the students' total pretest scores revealed that the textile knowledge of students as expressed on the textiles pretest was significantly greater:

(1) When students attended a small high school with a graduating class of 1 to 49 than when they attended a larger high school with a graduating class of 50 or more,

(2) When students had taken 2 or more semesters of high school clothing courses than when they had 1 semester or less, and

(3) When students constructed 25 per cent or more of their skirts and

blouses than when they constructed less than 25 per cent.

Since a knowledge of fiber trade names and generic groups, textile finishes, yarns, and fabric construction aid consumers in selecting the best suited fabric for a particular use, it is recommended that in a beginning textiles course more emphasis be placed on these areas in which students made lower scores. Revision of the pretest should be made regularly to keep it up-to-date.